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BRING the BLING
spray chrome like a pro p. 226

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car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

Monster madness

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MAD FORCE
RCX EDITION

STREET SWEEPER!
First Look
Trinity's Team Magic G4

SMART SIGNALS
Computer radio tuning tips

27 TOP TOOLS YOU NEED NOW

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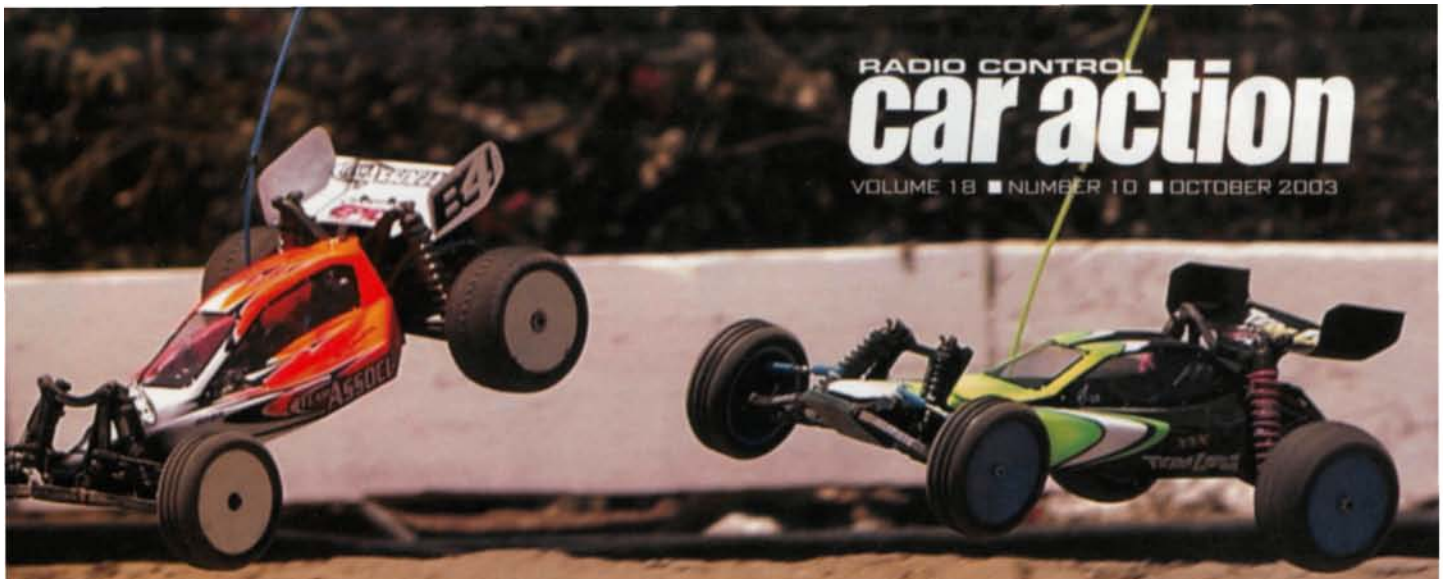


FEATURES

78 **HEAD TO HEAD** Associated RC10 B4 Stealth vs. Team Losi Triple-X Kinwald Edition
Best buggy battle by the *RC Car Action* team

128 **FIRST LOOK** Trinity Team Magic Nitro G4
Inside Team Trinity's latest race weapon by Steve Pond

136 Must-Have Tools
The basics and beyond by Matt Higgins

158 2003 Reedy Touring Car Race of Champions
Kickin' asphalt by Jason Sams

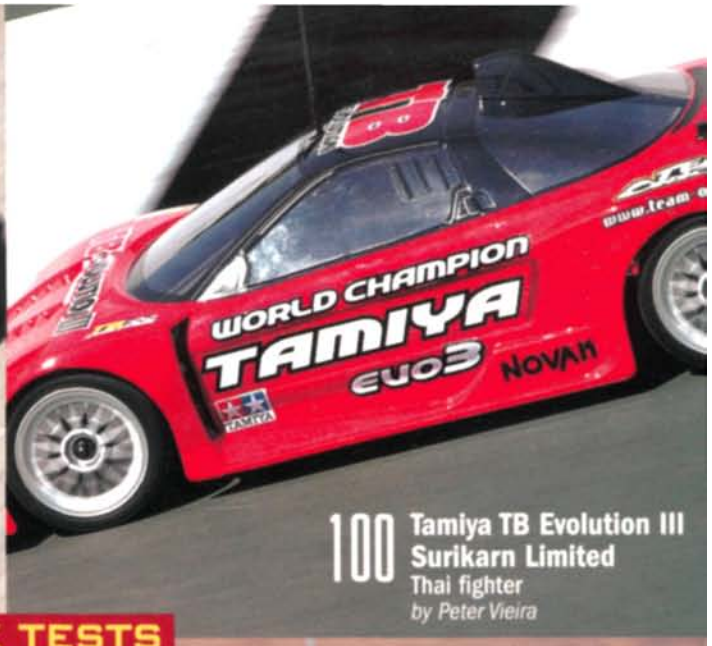
168 **HOW TO** Get the Most out of your Computer Radio
Transmitter tuning by Lito Reyes

184 **HOW TO** Avoid Common Nitro Mistakes
11 ways to keep on track by Stephen Bess

CONTENTS

RADIO CONTROL car action

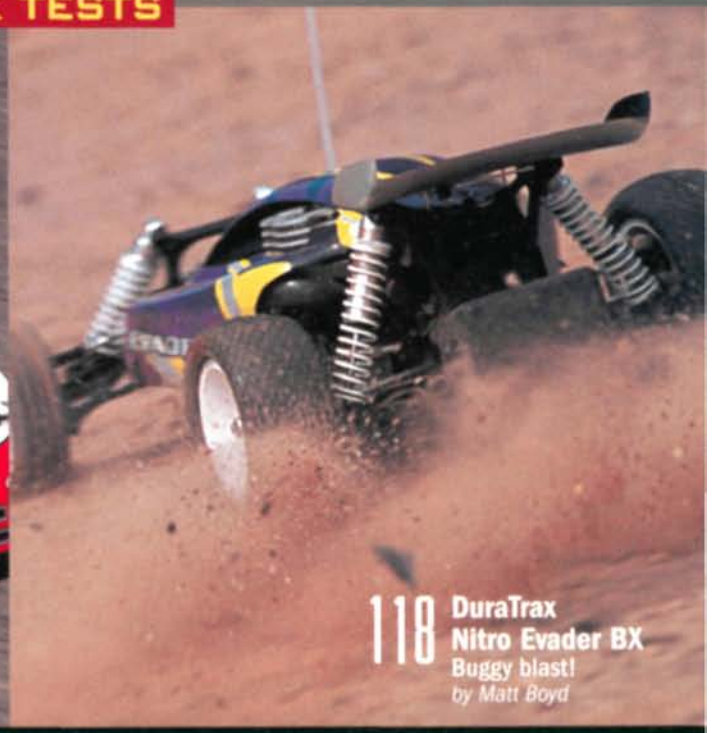
94 **Kyosho Mad Force RCX Edition**
Monster masher
by Jason Sams



100 **Tamiya TB Evolution III Surikarn Limited**
Thai fighter
by Peter Vieira

TRACK TESTS

110 **Team Associated Factory Team RC10L4 Oval**
All-out oval
by Jim Roper



118 **DuraTrax Nitro Evader BX**
Buggy blast!
by Matt Boyd

COLUMNS

24 **Starting Line**
by Peter Vieira

26 **Readers Write**

39 **Inside Scoop**
by John Howell

52 **Readers' Rides**
by John Howell

62 **Pit Tips**
Illustrations by Richard Thompson

70 **Troubleshooting**
by Matt Higgins

145 **Racer News**
by the *RC Car Action* team

196 **4x4**
Ultimate RC rock crawling
by Richard Trujillo

212 **Piston Power**
Used or abused?
by Stephen Bess

226 **Body Shop**
Let it shine
by Josh Thiel

240 **Product Watch**

265 **Backlot**
by Peter Vieira

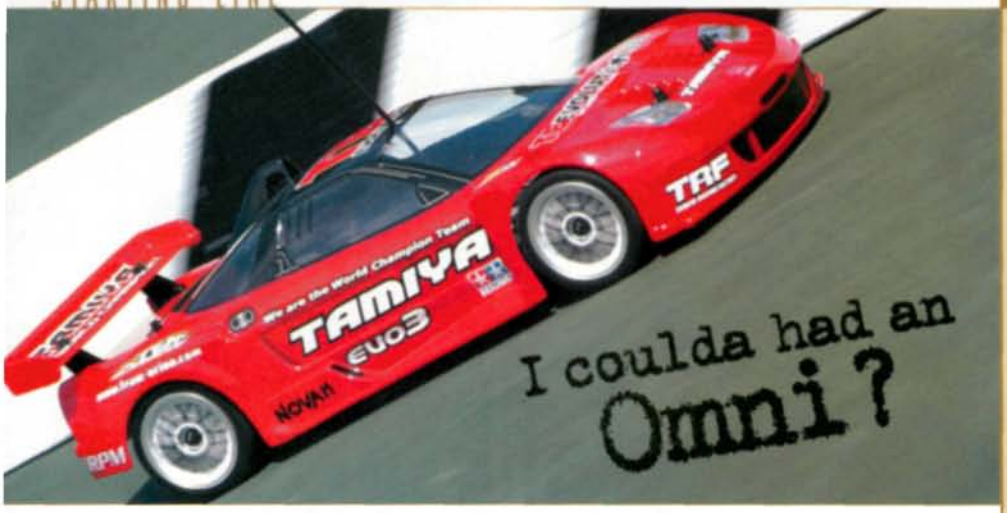
RESOURCES

260 **rcstore.com**

264 **Index of advertisers**

264 **Customer service information**

ON THE COVER: Nothing wheelies like a Kyosho Mad Force, especially when it's the O.S. Engine-powered RCX Edition. Another perfect Pete Hall shot.



It's inevitable. Right after "How fast does it go?" you will be asked, "How much does it cost?" Since I want to promote RC to the curious person in question, I always answer with a figure that represents a good value in a ready-to-run car suitable for Joe Beginner—$200 to $300. As impressive as you might find it to explain that you spent $1,800 on your race-ready car and support gear, the typical new guy will not think: "Wow, these are serious machines." He'll instead think: "Wow, I can never afford this." Or sometimes, he'll tell you that you're crazy and proceed to let you know all the other cool stuff you could have bought with your money. That's exactly what happened to me when I was pressed to reveal how much my personal car cost (which, in this case, was the Tamiya Evolution III Surikarn Limited—about $1,000 with all the electronics) after I had explained that an Associated TC3 RTR or Team Losi Triple-XS Sport were great ways to get started in RC for about $300. So, here it goes.

THE TOP FIVE THINGS I COULD'VE BOUGHT WITH MY $1,000

1987 Dodge Omni. Actually, I've had three Omnis in my life, and thanks to their tractor-like clutches, my left leg is still slightly overdeveloped. Pass.

PlayStation 2 and 16 really good games. Like I have time for 16 games! It took me like a month just to beat "Tomb Raider," and that was with a cheat book. Pass.

Dirt bike. Hey, I'd love a dirt bike, but not a wheezy $1,000 lump with bad rings and thrashed plastic. Pass.

Killer car stereo. Hmmm; that could be good, but I get sucked into Howard Stern or NPR before I can get my Junior Senior CD into the player, and you really don't need a high-end system to listen to Beetlejuice or "Engines of Our Ingenuity." Pass.

A set of 17-inch wheels for my Civic. For what, my silver 4-door DX? Yes; let me spend a grand to transform my old-lady car into an old-lady car with $1,000 wheels. Unless I can also get a lowering kit, exhaust and bodywork. I gotta pass.

See? Even at $1,000, RC is looking like a great value! But remember—you don't have to spend that much. Keep that in mind the next time you're getting a Q&A session, and do your best to turn those curious guys into RC car guys.

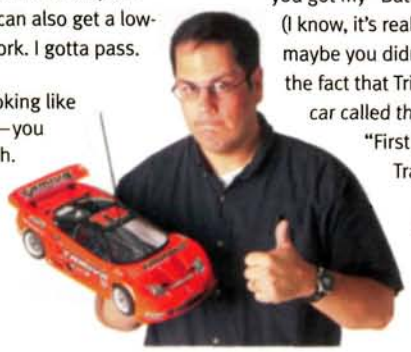
IN THIS ISSUE

10 tools you can't live without. What, only 10? There are about 1,000 tools I can't live without, but I'm a certified tool freak. If you haven't got the big 10 that are featured in this article, you should. Go to page 136, then go to the hobby shop.

You blew it! Well, you might think you did, but you probably didn't. All the common nitro goofs and their fixes are explained in (surprise) "How To: Avoid Common Nitro Mistakes," so you can quit making them.

Those buttons—explained! If your VCR is still flashing "12:00," and you still can't figure out how to use the automatic "popcorn" feature on your microwave, then chances are you aren't making the most of your computer radio either. That's why you need to read "How To: Get the Most out of your Computer Radio." Hey, you paid for all those features—use 'em!

G-Force! Mark! Jason! Tiny! Princess! Keyop! Maybe you got my "Battle of the Planets" reference (I know, it's really called "Gatchaman"); maybe you didn't. But that doesn't change the fact that Trinity has a new nitro touring car called the G4, and you'll get your "First Look" at it in this issue. Trans-mute!



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READERS WRITE

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ADAM IS BACK!

I remember reading *RC Car Action* years ago, and I just want to tell you guys that your great magazine pretty much influenced me to get back into RC. Let me explain. At age 15, about 10 years ago, I was into the RC scene; I read your magazines every month to see what was coming up next, and I was getting some great advice. Unfortunately, the local tracks "dried up," and I sold my Losi LXT. A few months ago, I was browsing at a local bookstore and saw the mag. I had to buy it to see what's new. Amazingly, not much has really changed, and it hit me, "I'm going to find a track." In fact, I found several around my area and one hidden at the end of my street! I couldn't believe it. Thanks to you again, I'm back into RC full force and now the proud owner of an RC10GT and a TC3. Thanks for bringing me back! [email]
Adam Kudrich

Welcome back! I also got into RC because of *RC Car Action*—it's turned out pretty well so far!
—Pete

KNOWLEDGE IS POWER

Since we all want to know the horsepower of an engine before we buy it, why doesn't the RC engine industry come up with a standard dyno test or a standard formula, or something like that? I'm sure it would make people happy to know exactly how many horsepower they're putting under the body. The industry could also provide a reliability report and give you the recommended maintenance intervals. Anyway, it's just an idea that I think might help the hobby. [email]
Camil Zuk

Great idea ... we had the same one! That's why we invested in our own custom dynamometer for RC Car Action and RC Nitro. When we print horsepower figures for tested engines, they are real power numbers—not mathematical estimations or reprinted data from manufacturers. We don't doubt that the horsepower ratings cited by manufacturers in their ads are honest, but that doesn't mean they're accurate. The trouble is that "brand X" may measure horsepower in a completely different way from "brand Y," and that means you can't compare the X's and Y's horsepower ratings. RC Nitro dyno-tests at least one engine in every issue; be sure to check it out!
—Pete

BRAINTEASER

I was a little confused by the August 2003 article on the new Super Brain 969. Under "Features," it states that the voltage threshold is adjustable from 5 to 75mV. Also, on page 182, a picture caption shows 30mV selected, and it clarifies that it is for the whole pack, so it's also 5mV per cell. In "Testing," the author says that the lowest setting is 5mV per cell, but earlier he writes that the reading is 5mV for the whole pack. So, is it millivolt per cell or millivolt for the whole pack that is displayed? [email]
Sean Hughes

It's the millivolts for the whole pack. When you program the 969, always multiply the setting you'd like "per cell" by the number of cells in the pack to determine the correct millivolt setting. Sorry it wasn't clear!
—Pete

TEENY WEENY RALLY

Do any kits convert the HPI Micro RS4 for rally use? Is there a way to get stronger shocks and bigger wheels to get more ground clearance? [email]
John Hefferan

You might be able to bash together an off-road Micro RS4 with wheels and tires from a 1/24-scale monster truck static model, but you'd have to do a lot of custom work, and you wouldn't have a "rally" car. And you'd still have problems: the exposed belt drive would get wrecked in the dirt, and the Micro's suspension doesn't have nearly enough travel to soak up off-road hits. But the biggest problem has nothing to do with the Micro RS4 in particular. The trouble is that anything smaller than 1/10 scale is just too small for real off-road running. Even the Kyosho Mini-Z Overland, which is built to run off-road, doesn't fare well in truly rough terrain.
—Pete

BAJA BOOSTERS

You know what would be a great idea? An article on totally souping up a TL01 (I have a Baja Champ)—just a suggestion, of course. I'd just like to see a super-slick TL01 on your pages; people often underestimate the quality of that kit. [email]
Jamie O'Toole

Nobody loves the TL01B more than I do! That's why I built a Tamiya Baja Champ "Project Car" way back for the September 1999 issue; I'll send you a copy.
—Pete

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TRUCK CHOICES

I am a faithful reader, and I want to purchase an RTR 2WD stadium truck. I have narrowed my selection to the DuraTrax Nitro Evader ST and the Associated RC10GT Nitro Plus. My friend is getting a Traxxas SportMaxx, and he thinks I should get one, too. It would be great if you did a "shootout" article that included the Nitro Evader and the RC10GT. [email]
Matthew

We'll do a new stadium-truck shootout soon, now that there are new players on the scene. The Nitro Evader ST is a really hot truck, and the GT is a classic with great racing potential. And don't forget the Traxxas Rustler 2.5; it has a fantastic engine and electric starting. You should also consider the SportMaxx, especially since your buddy is getting one. Nothing will be more fun for you than hitting the track with identical trucks.
—Pete

CAPACITOR CONFUSION

I was on Tower Hobbies' website looking at the DuraTrax 12T reversing ESC. The technical write-up said to solder three type 0.1 capacitors to my motor. I've never seen this on any motor anywhere in your magazine. Is it really necessary, or will the car blow into a million pieces without them? I'm really stuck. [email]
Steve

The capacitors (or "caps") reduce radio interference caused by the motor, and no, your car won't blow into a million pieces without them—but the radio gear might glitch. Many motors now include "surface-mounted" caps that are factory-installed under the brush-hood hardware, or they have traditional solder-on caps already installed for you. But if your motor or ESC does not include the required 0.1 microfarad caps, you can get them at the hobby shop and at good ol' RadioShack.
—Pete

YOU SAID IT

"Guys with big wallets don't always win."

I want to tell you a little story. My neighbor gave me a Tamiya Blackfoot to sell, so I could buy some equipment for racing. I sold the truck for $60 and added the money I had been given on various occasions. My Mom helped me out with a little more, and I managed to buy a basic RC10B3 kit, a Green Machine motor, a used ESC, a low-price Futaba AM radio and a battery and charger. For about six months, I spent all my time with that little car until it was just right for racing. I started racing in May, and by June I took first place. That was about three years ago, and since then, I have owned about five cars. I'm telling you this to give some hope to those people who think that guys with big wallets always win. I figured you're the right ones to spread this information. Keep up the good work! [email]
Tim Klein

Each month, "Readers Write" sponsor Team Trinity awards the "You said it" letter writer the Reference body of his choice. This is the Wasp shell for the Kyosho Inferno MP-7.5.

Actually, Tim, you're the right person to spread that information! Thanks for reminding us that drivers win—not fancy parts or dollar bills. I never forget this, because I'm always the guy with the trickest car in the C-main!
—Pete

WRITE TO US! Letters should be addressed to "Letters," Air Age Inc., *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA or email us at readerswrite@airage.com. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

inside scoop

THE LATEST STUFF • SPY SHOTS • INSIDER INFO

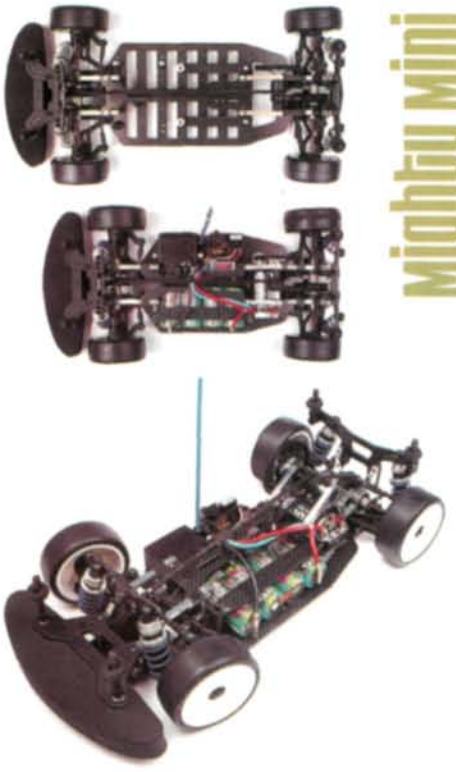
BY JOHN HOWELL

Losi Goes Mini

Team Losi mini Triple-XT

We can't divulge how we obtained this picture, but we can tell you that this is a spy pic of Team Losi's prototype mini Triple-XT. Look closely at the photograph, and you'll easily discern the size of the mini as it sits alongside its full-size counterpart. Judging by the looks of the little critter, we'd say it is right around 1/18 scale and looks much like the full-size truck (at least, its suspension design is similar). Let's hope this spurs a whole new category; we're sure Losi wouldn't mind. We can see it now ... a slew of new race trucks taking over the race scene. Pretty cool stuff! Stay tuned.

Team Losi; distributed by Horizon Hobby Inc. (909) 390-9534; teamlosi.com.



Mighty Mini

XRAY T1 Mini

XRAY is getting ready to release a mini version of its successful T1 touring car. The new T1 Mini has scaled-down versions of all the popular features of the T1 touring car family, including a graphite chassis and top deck, front and rear shock towers, a battery holder, upper links and a narrowed, double-wishbone suspension, shortened drive shafts and shorter front drive belt. The T1 Mini is approximately 1/12 scale and is designed to accommodate a 4-cell battery pack, and it accepts all the standard-option and spare parts available for the entire T1 family.

Some of the T1 Mini's hot features

- Fully ball-bearing equipped (22 ball bearings).
- CNC-machined lightweight graphite chassis, upper deck, shock towers, battery strap.
- CNC-machined T6 Duraluminum bulkheads with built-in belt tensioner.
- Ball-bearing-supported center-point steering with built-in dual Ackerman servo-saver.
- 4-step externally adjustable XRAY racing shocks with adjustable and non-adjustable keyed pistons.
- Lightweight, externally adjustable, long-wear ball differentials (heat-treated and hard-coated) with Labyrinth Dust Covers.
- Rebuildable universal drive shafts with low-friction drive clips and integrated ultra-true hex hubs (heat-treated and hard-coated).
- Handmade, high-tensile spring-steel transmission parts.
- Simplified C-hub suspension.
- Axial ball bearings for differential (with larger balls for smoother diff operation).
- Starburst plastic-composite wheels.

XRAY; distributed by Serpent USA (305) 639-9665; teamxray.com.

Heavy-metal cells!

Trinity Epic Monster Metal 3300 Plus Ultra Voltage Batteries

Looking for some of the baddest batteries around? These new Epic Monster Metals will definitely interest you. Epic has teamed with GP to produce its own custom-made, hand-picked cells, that, according to Epic, boast the highest voltage and capacity in RC today. The new Monster Metal 3300s are made with the latest NiMH technology and tweaked for maximum RC performance. They're available in a variety of trims, from the top-of-the-line Team "VIS-matched" packs to the more cost-conscious Race Matched cells (that feature the same run time as the Team cells but have lower voltage).

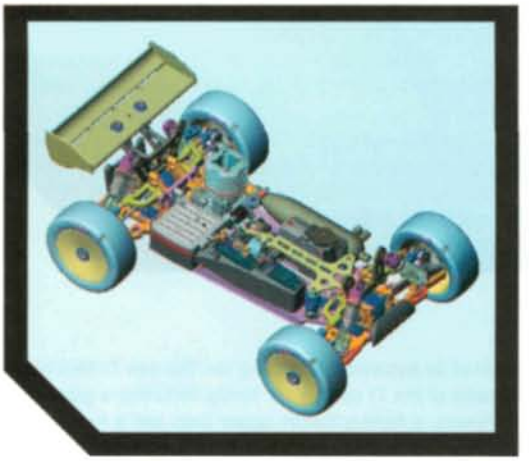
Trinity Products Inc. (732) 635-1600; teamtrinity.com.

Enter the Matrix CEN Racing Matrix and Genesis prototypes

No, these aren't Keanu Reeves' new RC cars! We're talking about CEN's prototype Matrix 1/8-scale buggy and the new nitro-powered Genesis monster truck. Here's the scoop so far (don't lock these specs in yet; final production specifications may vary).

Genesis

Some of the Genesis' main features are: aluminum main chassis plate; 4-wheel steering; 4-disc-brake system; .21 big-block racing engine (may even be .26 or .30); racing tuned pipe with high-flow manifold; huge, 7.5-inch-tall tires; full ball bearings; hardened-alloy drive train; light-metal telescoping drive shafts and center shafts; hard-anodized Teflon-coated aluminum threaded shocks; 12 oil-filled, adjustable shocks with reservoirs (eight main shocks with four after-shocks); three sealed, low-CG diffs (front, rear and center as on an 1/8-scale buggy); electric starting system; transmitter-controlled reverse; 2-speed automatic transmission with adjustable shift point; adjustable toe/camber (front and rear); large, 210cc fuel tank; high-impact front and rear bumpers; protected radio box; titanium turnbuckles.



Matrix

The new Matrix XRB ready-to-run 1/8-scale off-road buggy will come with 7075 T6 aluminum chassis plates and shock towers; fully enclosed receiver/battery compartment; high-volume coil-over, Teflon-coated oil-filled shocks; 3.5mm shock shafts; silicone-oil-filled differentials; four 2mm vented brake discs; fuel brake splashguard, adjustable front and rear brake bias; 3-shoe aluminum clutch system; CVS drive shafts with protective boots; full set of high-quality stainless-steel ball bearings; high-impact side guards; front and rear swaybars. When we get our hands on one, you'll be the first to know!

CEN/Genka Trading Corp. (714) 792-1923; cenracing.com.

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RC8136, Traxxas 2.5 Monster Head, (head, cap, fin, screws), $55.99
Extra fins available, Sirio (RC8134), Traxxas (8137) $10.99

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Sirio Version Shown

smokin' side pipe

Tsais custom side pipe pro

This pipe is just too cool-looking. And it isn't just for show—it actually works! The new Tsais Custom Side Pipe Pro for the HPI Racing Savage .21 is a true, dual-chamber, aluminum tuned pipe. Currently, it's available only for the Savage (it also fits other .21-equipped monster trucks), but a Traxxas T-Maxx 2.5 version should be available soon.

Tsais; distributed by RC Hub (816) 224-2070; rchub.com.

sweet-Z

HPI Racing Nissan 350Z Super Nitro RS4

HPI is set to release a Nissan 350Z version of its popular RTR Super Nitro RS4. The Nissan 350Z is one of the hottest road cars going today, and this version should prove to be very popular! The new RTR Super Nitro RS4 also includes the improved Nitro Star 15FE engine.

HPI Racing (949) 753-1099; hpiracing.com.

In F1, it's all about the tires

RC Factory Michelin Tamiya F201 tires

If you race a Tamiya F201, it goes without saying that you're probably a big F1 fan. Check out these officially licensed Michelin F1 tires from RC Factory. Specifically designed for the F201, they come in soft and hard compounds. The only question is, what happens when you put them on Schumacher's Bridgestone Tamiya Ferrari?

RC Factory; distributed by RC Hub (816) 224-2070; rchub.com.

Dream machine

Nightmare Rustler racing chassis

The Traxxas Rustler is for those who are looking to get their feet wet in the off-road scene. And while a few aftermarket parts are available for the truck, it isn't exactly a true "race truck." For those who want to transform the truck into more of a racer, Nightmare comes to the rescue with a chassis kit for the popular off-roader. It includes all aluminum chassis components; all stainless-steel nuts and bolts for assembly; a new antenna mount, tube and cap; battery hold-down cushion; two insulating plastic strips and double-sided tape to install your electronics.

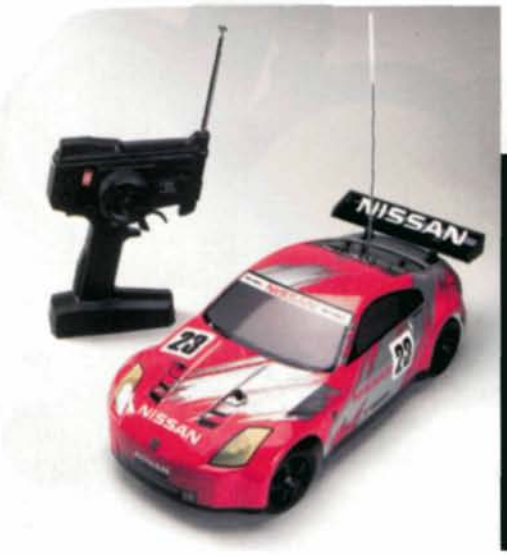
Nightmare (866) 331-7744; nightmarechassis.com.

Souped-up savage!

HPI Racing savage SS

If you're one of the many monster-truck fans wishing you could build your own machine rather than settle for an RTR, HPI has you covered with a new kit version of its popular Savage truck. HPI spec'd out the new kit with its brand-new Nitro Star S-25 engine that has 20 percent more displacement, a ribbed-aluminum tuned pipe and adjusted gearing to maximize the new-found power. HPI provides two sets of gears with the truck: one for hard acceleration and another for the speed freaks (above 40mph). Also included are a set of chrome, heavy-duty dogbones, stiff purple shock springs, a clear Nitro GT-1 body (replaces the prepainted one in the RTR version) and adjustable upper arms with thick steel turnbuckles for extra durability.

HPI Racing (949) 753-1099; hpiracing.com.



Return of the Z

Tamiya RTR 350Z

How's this for a sweet deal? Start with Tamiya's newest touring-car chassis—the TT-01—fully assembled and ready to go. Add a fully painted and decaled 1/10-scale body of the newest competitor on Japan's GT championship circuit—the Nissan 350Z done up in factory show-car colors. Round out the deal by including the motor, ESC and radio—also rigged and ready to go! That's the idea behind Tamiya's XB Pro Series 350Z racecar. The TT-01 chassis is a step up for an RTR, with its shaft-driven 4WD, fully sealed gearbox and diffs and double-wishbone suspension at all four corners. The tub chassis sports impressive rigidity and efficient packaging, and the motor is mounted longitudinally and down low for improved handling. Looks good, drives great, easy on the wallet, and no building—what's not to like?

Tamiya America Inc. (800) 826-4922; tamiyausa.com.

Big bad big-block

Team Orion
Wasp .26

Team Orion is set to give your big nitro truck a boost! Made in Italy, this new rear-exhaust Wasp .26 engine was designed specifically for Associated's new Monster GT, HPI's Savage and other vehicles that require .21-size engines. It comes with an SG-style crankshaft, an 8mm slide carb and a standard plug. Team Orion's specs claim that it produces a whopping 2.7hp at 37,000rpm!
Team Orion (714) 694-2812; teamorion.com.

Bulk up those arms

Impact Performance Products TTRS Rear H-Arm conversion kit

IPP's new TTRS Rear H-Arm conversion kit for the Traxxas Maxx line of trucks is pretty beefy. The arms will work on any stock Maxx as well as on OFNA's Dominator (when using Pro-Line's T-Maxx bulkheads), Hardcore Racing's Maxx, JT Racing's Maxx and just about any vehicle that uses the Pro-Line or WideMaxx suspension kits. The TTRS is designed with 1 degree toe-in. The arms are universal (they fit either side), and you can run either one or two shocks. The shock position can be changed in either direction, and best of all, there is no turnbuckle to adjust or ball cups and axle carrier arms to break. Available in molded composite plastic and also 6061 aluminum.
IPP (661) 663-0894; impactperformanceproducts.com.

Flaming fangs

Venom Racing
Fireball modified

Venom Racing recently launched its new line of modified motors—the new Fireball series, designed with low cost in mind without compromising performance. The motors are totally rebuildable and feature epoxy-balanced comms that have been diamond-trued to help ensure smooth running. Other included features are dual ball bearings, prewired bullet plugs and factory-installed capacitors. Venom installed its own Hi-Power brushes. The Fireball mod motors are available in four double-wind configurations—15, 17, 19 and 21 turns.
Venom Racing (208) 762-0620; venom-racing.com.

Nitro powerhouse

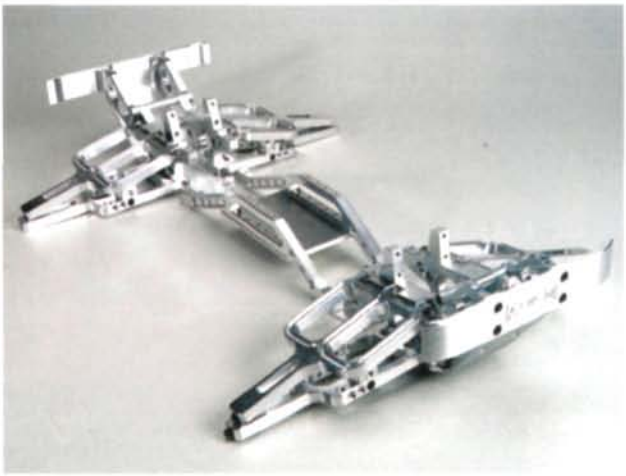
HPI Racing Nitro Star Pro 12R XS

HPI's new engine is a powerhouse! The Nitro Star Pro 12R XS is HPI's first rear-exhaust engine that "promises to be a top performer with all expert-level racers." Its aggressive 3-port design and claimed 1.35hp on tap will undoubtedly get the attention of most racers. Some other noteworthy features are ABC construction, machined-aluminum head, composite slide carb and included dual-element, pre-oiled filter.
HPI Racing (949) 753-1099; hpiracing.com.

American CNC Machining Inc.
The skeleton

American CNC Machining's new Skeleton chassis kit for the T-Maxx is made of a combination of 6061 T6 aluminum and stainless-steel hardware. The Skeleton's aluminum parts for front and rear are: bumper set (including bumper mounts and bulkhead braces), bulkheads (including stainless-steel pins) and skidplates. The center skidplate, complete sets of suspension arms and chassis braces, drive hex hubs (with O-rings) and an extra-large, single-piece cooling head (for the 2.5 T-Maxx) are also aluminum. Steel socket-head and flat-head screws bolt all above-mentioned parts together. ■
American CNC Machining Inc. (864) 638-2500; acncm.com.

Heavy-duty bones



readers' rides

YOUR BEST BUILDS

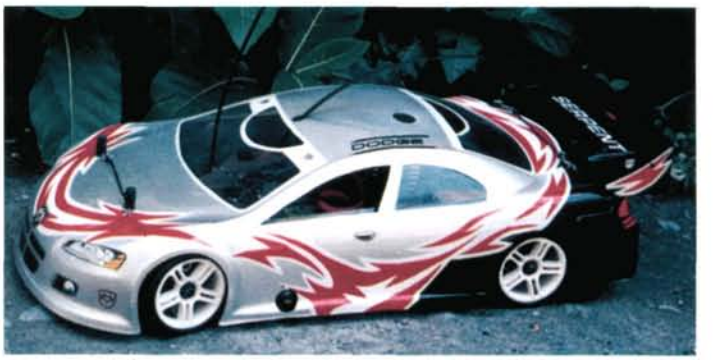
BY JOHN HOWELL

NATHAN SOUTHARD, TULARE, CA
TRAXXAS T-MAXX 2.5

This hot-looking T-Maxx 2.5 has a ton of action going on under the hood. Its owner, Nathan, has hopped up the truck with the following upgrades: a New Era roll bar; a Robinson Racing aluminum brake-disc kit; a DuraTrax aluminum servo guard; Maximizer Products aluminum beadlock rims; Traxxas aluminum chassis braces; Pro-Line Maxx Mulcher tires; Full Force RC aluminum skid-plates and shock covers; a Power Products dual pipe; a Motor Savers air filter; and a Futaba high-torque steering servo. Nathan topped it off with an Atomic F-350 body.

TRAVIS HOOVER, NEWVILLE, PA
TRAXXAS T-MAXX

Fourteen-year-old Travis tells us that, except for the addition of an MIP stinger exhaust, an in-line fuel filter and a set of 1/8-scale monster truck wheels and tires, his truck is relatively stock. Travis plans to add a Pro-Line suspension kit to enhance the truck's handling capabilities. In the meantime, he is content to just have fun with the hobby!



MANUEL HERNANDEZ, ST. PASAY CITY, PHILIPPINES
SERPENT 705

Manuel's Serpent 705 nitro competition touring car is one fast ride because it's equipped with a Sirio 5-port engine that pumps out approximately 1.5hp. It's ably controlled by a Futaba 3PJ PCM radio with two 9402 servos, and last, but definitely not least, it's topped off with a wild-looking "tribal-esque" Dodge Stratus body!

JIM MCCULLOUGH, GRAND PRAIRIE, TX
TEAM ASSOCIATED RC10GT DIRT SPRINT CAR

Jim's converted dirt sprint car started out as an Associated RC10GT off-roader! The chassis and roll cage have both been hand-built out of aluminum. He uses a Futaba radio to control the car, and a Novarossi C12 engine provides the power. A Team Losi and Pro-Line tire combo help it stick to the dirt, and miscellaneous RPM, Lunsford and MIP mods complement the rest of the car. If you happen to be in the vicinity of Irving, TX, Jim runs his car at Wild Bill's every week, so go check it out!

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Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," RC Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to RC Car Action and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Send email submissions to readersrides@airage.com.

BERT STEURER,
VAUDREUIL, QUEBEC, CANADA

TRAXXAS STAMPEDE

This "Beast," as Bert likes to call it, may look like an ordinary Traxxas Stampede, but heavy modifications tell a different story. Underneath the Pro-Line Chevy Silverado body, you'll find two, 2400mAh-matched battery packs that feed a Traxxas 14.4V EVX speed control, RPM Clawz wheels and a Kyosho Magnetic Mayhem motor. Bert has lowered and widened the truck's stance for added stability, and he says that he has clocked the truck at 40mph.

DENISE HABER, VIRGINIA BEACH, VA

TRAXXAS E-MAXX

After watching her son Daniel and husband Dave spend countless hours working on their Traxxas E-Maxx trucks, Denise decided it was time to get one of her own. (You can see Dave's cool E-Maxx in our recent *RC Monster Trucks* special issue.) Well, shortly after she purchased the truck, Denise picked out a Pro-Line Jeep body and painted it pink pearl with a sparkly metallic finish, and when it came time to decal the truck, her love of roses made that decision a snap! Denise seems to be enjoying her new hobby very much. As she puts it, "If you can't beat 'em, join 'em." Truer words have never been spoken, Denise.

The Best Kept Secret in Racing...

REEDY

Reedy "X-cell" GP3300's. Reedy/Yokomo Gold Peak 3300's have longer run times than most other 3300 Mi-MH cells, and have a great low price that makes them your **BEST** choice!

#665 Reedy GP3300 "X-cells", 6-Cells...$89.99

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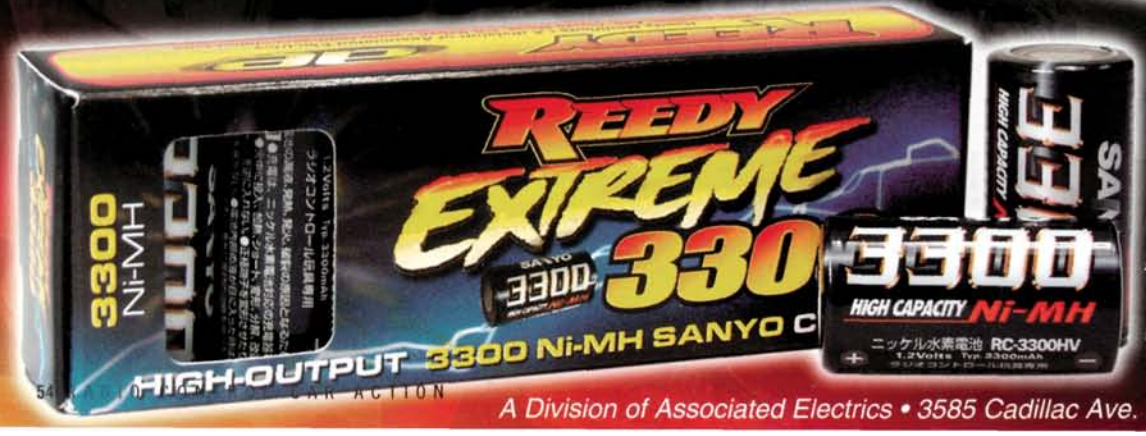

Reedy 3300 "Extreme" Sanyos. The newest 3300 Ni-MH cells from Sanyo! The Reedy 3300 "Extreme" cells are cycled, matched, and voltage treated for on-track performance you can really feel.

#660 Reedy 3300 "Extreme" Sanyos, 6-Cells...$129.99

#659 Reedy 3300 "Extreme" Sanyos, 4-Cells... $87.99

A Division of Associated Electrics • 3585 Cadillac Ave. Costa Mesa, CA 92626

MICHAEL CAPUTO, UPLAND, CA

TEAM LOSI MATT FRANCIS EDITION TRIPLE-XT

Michael tells us that he's already hooked on the hobby, and this is only his second truck. He races his Matt Francis Edition Triple-XT at Pegasus Hobbies in nearby Montclair, CA. His truck is equipped with a Trinity D4 11-turn double, a Novak Dually ESC, an Integy 2400 battery and a JR radio, receiver and servo. Everything else is stock except for the front and rear tires. According to Michael, this is only the second body that he's masked off and painted by himself. Good job, Michael!

PATRICK HUGHES, NORTH AUGUSTA, SC

TRAXXAS T-MAXX

Patrick's wild-looking Traxxas T-Maxx is completely custom—well, at least the body is! This eye-catching truck is relatively stock. He writes, "I drive it almost every day when I have the time. It surely is a mean machine *when it is running."* His truck is topped off with a custom-painted CJ8 Jeep body with a blower motor sticking out from "under the hood." Wait a minute, Patrick—you say that you drive it every day when you have time? Those tires look pretty fresh to us ... you need to get back out there and lay down some throttle action! ■

and New MATCHED Sport Packs!

Reedy's "Rated-X" Matched sport pack batteries use genuine Panasonic or Sanyo Ni-MH cells that have been given the same cycling, matching, and voltage treating as Reedy's championship-winning racing cells. The batteries are fully assembled in clear tubes so you can see the matching info right on the label of each cell. Don't settle for "mystery" cells in your sport packs... get Reedy's "X-Rated" packs and see the power you've been missing!

REEDY

#698 Reedy "Rated-X" Sport Pack, Sanyo cells

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pit tips

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HINTS, TRICKS, TIPS AND IDEAS FROM READERS LIKE YOU

ILLUSTRATIONS BY RICHARD THOMPSON

DIRTY RECEPTION

You'd be surprised how much dirt can accumulate inside your receiver! To clean it out, gently pry open the snap-fit tabs that hold its case shut, or remove the screws that hold the case together (a no. 0 screwdriver is usually the correct size). Dump out the debris, spray off any dust with "canned air," then reassemble. To avoid future pile-ups of crud, cover any unused channel openings with electrical tape.

Jim Wright
Keene, NH

TAPED TIRES

Wrap Scotch tape around the circumference of the tire to hold it firmly to the rim when gluing tires. It holds the tire to the rim even more securely than thick rubber bands, and you can peel it off and throw it away when the glue has cured. It's especially effective when you glue tires with firm foam inserts that want to push the tire away from the rim. Wrap the tape as tightly as you wish; it works on any size tire.

Jeff Pond
Norwalk, CT

PIN PLIERS

It's easy to convert a pair of pliers into a roll-pin installation tool. Just chuck a cutoff wheel into your rotary tool, and cut a slot into one of the jaws of a pair of slip-joint pliers. When you squeeze the roll pin into the axle with the solid jaw, the slotted jaw allows the other end of the pin to pass through.

Bernie Cope
Lewiston, ID

SPILL STOPPER

To avoid fuel spills when you remove the carburetor or the entire engine for maintenance or chassis cleaning, connect the fuel line to the pressure inlet of the fuel tank. If you must have fuel in the tank, disconnect the pressure line from the muffler to the tank, then remove the fuel line from the carb and attach it to the fuel tank's pressure fitting. This traps all the fuel in the tank, and you'll be able to work on the engine/chassis without worrying about spills from an open fuel line.

David Turvey
Breckenridge, CO

WIN AN OFNA YO-YO, OFNA OB4 AND *RC CAR ACTION* SUBSCRIPTION! SEE NEXT PAGE FOR DETAILS.

pit tips

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SOAPY SPUR GEAR
Plain white soap makes a great pinion- and spur-gear lube; just swipe the soap bar across the gear teeth. It's dry, so it won't attract dirt or dust, and it won't be flung off the teeth as the gears spin.
Frank Goody
Cerritos, CA

HEX HOLDER
If you have trouble preventing your Kyosho car's friction-fit drive washers from slipping, try putting a "star"-type lock washer under the axle nut. It will grab the plastic rim and help everything stay put.
Stan Harper
Paris, TX

CLOG STOPPER
Tire-glue bottles almost never clog as long as they are stored upright. Instead of laying glue bottles down in a drawer of your pit box, stand them up in the roomier top compartment. To prevent them from tipping over, glue dividers cut from sheet plastic into the toolbox to create close-fitting compartments.
Ben Frickman
Atlanta, GA

SLIP 'N' SLIDE
If you have an antenna wire that simply won't slide into its tube, dab a light oil on the tip of the wire. It will get the wire through the tube, and it's easily wiped off when the job is finished.
Mike DelToro
Boone, KY

"Pit Tips" are submitted by readers and are screened for functionality, feasibility and safety but are not tested by *Radio Control Car Action*. *Radio Control Car Action* and the submitting authors are not responsible for personal injury or damage to models or tools resulting from readers' use of "Pit Tips."

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troubleshooting

YOU'VE GOT PROBLEMS? WE'VE GOT FIXES.

BY MATT HIGGINS

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QUESTIONABLE GLOW PLUG

I have no idea what's up with my RTR Nitro TC3's engine. It used to run fine, but now it only runs if I leave my glow-plug igniter on. As soon as I take it off the plug, it dies. Holla back, if you know what's up. I've already spent a ton on my RC stuff. Will this cost me a fortune to fix?

Garret Moore

A glow plug like this one must be in good condition if your nitro engine is to work properly. It is easy to remove with a cross-wrench. To test the plug, screw it into the hub of a glow-plug wrench and attach your plug igniter. Assuming your igniter is properly charged, the plug should immediately glow bright orange.

Well, here's your holla back; you're in luck. The problem is with your glow plug; it has seen its last day. The good news is that it's cheap to replace. You can get a new one for roughly $5. Your faulty glow plug doesn't stay lit when the igniter is removed and thus causes an immediate flameout. The igniter initially heats up the plug, and the heat from the combustion in the running engine keeps the plug glowing. A new plug should fix the problem, and I recommend that you buy the same type of plug as came with your kit; it's a McCoy MC-59 (item no. MC59).

If you have adjusted any of the carb's needle settings or its idle position, I also suggest that you return those to the factory settings. Finally, it's also a good idea to confirm that your glow-plug igniter is fully charged before you attempt to start your car.

REAL PERFORMANCE PRODUCTS!

T-Maxx/2.5-Maxx Steel Top Shaft
NEW
This precision machined **hardened** steel top shaft will fit all T-Maxx. Includes oversize ball bearing. RRP 8525

T-Maxx/2.5-Maxx FORWARD ONLY Steel Gear Kit
NEW
This kit contains a 26T **hardened** steel output gear, a forward drive hub adaptor, steel spacer and Pin. RRP 8586. **Hardened** aluminum version RRP 8585.

T-Maxx/2.5-Maxx Hardened Forward Primary Gear
Precision machined from solid steel and then **hardened** RRP 8529
Hardened aluminum version RRP 8528.
NEW

www.robinsonracing.com

T-Maxx/2.5-Maxx Forward Primary and Reverse Gears
NEW
This kit contains a precision machined **hardened** steel primary forward gear, a **hardened** aluminum reverse gear and pin. RRP 8521

MAKE NO COMPROMISES!

T-Maxx/2.5-Maxx Primary Reverse Gear
This gear is precision machined from solid aluminum and **hardened**. Includes pin. RRP 8522
NEW

T/E-Maxx/2.5-Maxx Accessory Spurs
A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72, 74 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65, 72 and 76T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

T-Maxx/2.5-Maxx Lightened Spur And Double-Disc™ Slipper Kit
RRP's NEW line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx/2.5-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor, 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. **Complete Slipper Kits** are available in the following sizes:
RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx
RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro
RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro
RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx
Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

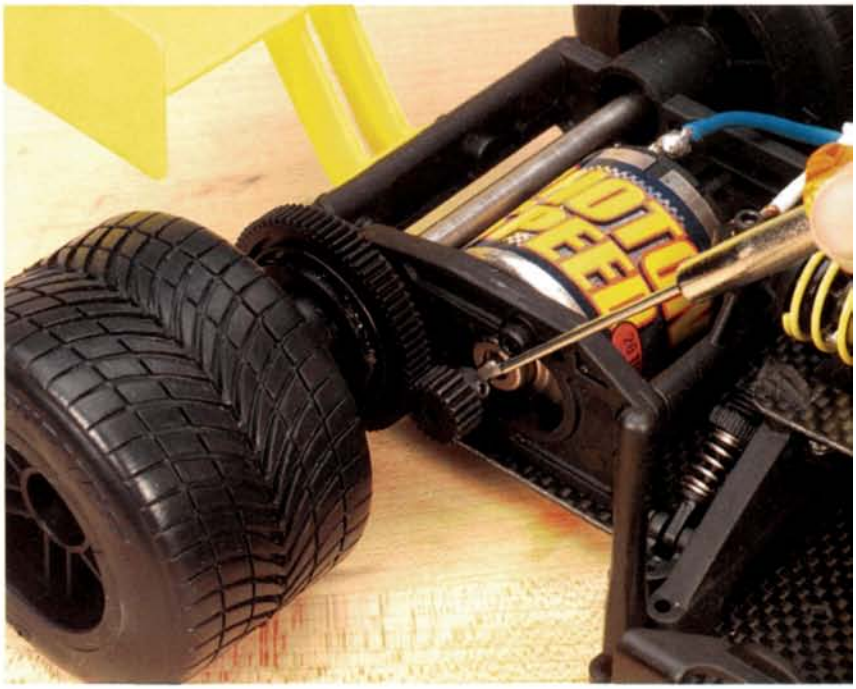
RUNAWAY PINION

I just got into racing, and it seems as if every time I race, I lose my pinion gear. I tighten it as tight as I can, but it keeps slipping off and ruining my race. Please help me end this embarrassment and finish a race.
Ben Roy

Ah, the memories ...

Repairing a runaway pinion is an inevitable RC rite of passage. New kits include L-wrenches for the initial assembly, but these wrenches are not fit for constant use. Their ends become rounded/dulled easily, and they then strip the setscrew in the pinion gear. You can cut off the dulled end of the L-wrench to create a new wrench tip, but it's rarely worth the effort; the results don't last, and you'll have to keep doing it. The better solution is to pick up a few high-quality hex wrenches to replace your kit's L-wrenches: 1/16 inch and 0.050 inch are the most common sizes needed for pinions. You will soon wonder how you lived without them, and best of all, your pinion will stay put for an entire race.

It would also be a good idea to replace the setscrew in the pinion or to install a new pinion that comes with a new screw. When you snug everything down, line up the pinion and tighten the setscrew on the motor output shaft's flat spot. This will ensure that the setscrew is fully tightened. Check out this month's "Top 10 Tools" article for help selecting a new wrench set and other cool tools.



A high-quality pinion wrench will allow you to torque down the setscrew on the motor's output shaft properly.

T/E-Maxx/2.5-Maxx Steel Diff Gear Set

T/E-Maxx/2.5-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. 2 sets needed per truck. RRP 8590

T-Maxx/2.5-Maxx Aluminum High Performance Brake Kit

New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. Also fits newer T-Maxx. RRP 8562
Older style half shafts use Brake Kit RRP 8560.

DON'T SETTLE FOR SECOND!

RR

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T-Maxx Vented Flywheels

Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 8551 Blue, RRP 8550 Natural Silver
NEW 2.5-Maxx Vented Flywheel, Blue Only RRP 8552.

T/E-Maxx/2.5-Maxx Replacement Pinion

This precision machined steel steel pinion fits RRP 8590 Diff Gear. RRP 8591

T-Maxx/2.5-Maxx Hardened Steel Clutchbells

CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

ROBINSON RACING PRODUCTS

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troubleshooting

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To free a "hung brush," give it a gentle tug and then let it snap back into place.

STUTTERING MOTOR

I have a Traxxas Stampede that came RTR with an ESC. Whenever the truck goes over jumps, it dies when it lands. When I pick it up, it suddenly starts up again. It then runs fine until I take another jump, after which it dies again. The odd part is that the steering works when it coasts after a jump; I can steer it back to me, but the motor doesn't start again until I pick the truck up. How can this be?

Bob Dorman

It sounds as if your truck is possessed. Have a priest perform an exorcism; your Stampede should return to its friendly and well-running previous state. If that doesn't work, check your motor and ESC; first, take the motor out to clean it with motor spray. If you replaced your sealed-end-bell motor, pay close attention to the brush hoods because dirt can build up in there and prevent the brush from traveling properly and making contact with the comm. This is called a "hung brush," and it causes problems similar to those you described. It also sounds as if you might have a loose wire that is breaking contact because of the jolt when the truck lands. Two wires run from your ESC to your motor; one of these may have a faulty connection. The loose wire is probably at the ESC end because when a wire falls off the motor, it's completely off. In contrast, the end of an ESC wire that's barely held in place by the ESC case might be loose enough to allow the interruption of the current flow. You can take your ESC apart and solder the wire back on, or send the ESC back to its manufacturer. Take the ESC apart only if you're very knowledgeable about electronics; you'll most likely void your warranty, and you risk doing much more harm than good if you solder it imprecisely.

RC10-GT Steel Combo

Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. RRP 2365

RC10-GT Hardened Steel Idler Gear

Cut from solid steel stock, this RC10-GT gear is lightened and hardened for super quiet precision and extra long life. Black tranny grease included. RRP 2213

Associated Titanium Stealth Top Shaft

CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

RC-10GT Hardened Steel Clutchbells

These steel Clutch Bells are CNC machined from solid steel then the teeth are machined on. This makes the part stronger with less gear "run out". Available in 14T thru 20T, 22T and 24T. RRP 22XX

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DON'T SETTLE FOR SECOND!

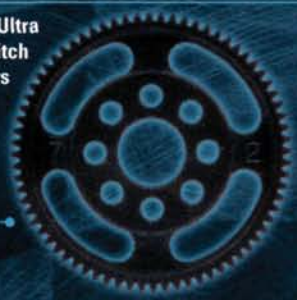
RC-10GT 32 Pitch Spurs

Precision machined from heat-resistant, super tough plastic, these spurs mesh flawlessly with our Clutchbells. Available in 63T thru 67T, RRP 2263 - RRP 2267.

Hardened Diff Gear

Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT

TC3 Ultra 48 Pitch Spurs



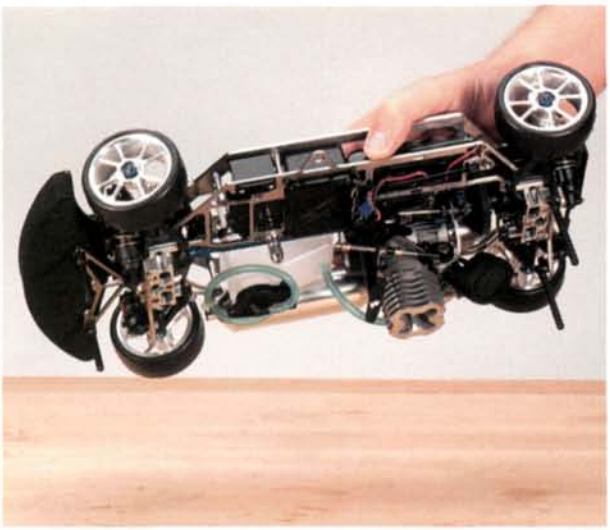
Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T, RRP 1670 - RRP 1680.

PULL-START WORKOUT

My car runs fine for the most part, but sometimes, when I try to restart it after racing it around, my recoil starter jams up. With a good yank, I have even lifted the car. Is there something wrong with my pull-starter?
Joe Tardif

The problem isn't with your recoil starter. You are experiencing "hydra-lock"—or, more correctly "hydraulic lock." Basically, your engine is flooded with unspent fuel. Because there is too much fuel in the cylinder, the piston can't properly run through its cycle, so it locks up when you yank the starter cord. Remove the glow plug and drain out all the excess fuel. Don't lose the glow-plug gasket or allow any dirt to fall into the open combustion chamber. After you've drained out the excess fuel, the engine should start normally.

You didn't mention how you are "killing" your engine, but if you want to shut the engine off, don't do it by plugging the exhaust tip; that can cause the fuel to flood the engine. Pinch a fuel line or stop the flywheel with the toe of your shoe instead.



To drain a flooded engine, remove the glow plug and turn the engine over to drain out the excess fuel.

TOOLBOX

Hobbico Quick Drill Set

This incredibly handy little five-drill-bit set comes in a soft vinyl case. The bits' aluminum handles are knurled for easy gripping, and their different colors make identifying the 3/16-, the 1/8-, the 3/32-, the 5/64-, and the 1/16-inch bits easy. These "finger" drill bits are not only perfect for trackside modifications and repairs; they're excellent for building new kits as well.

Quick Drill Set—item no. HCAR0699; $11.99. Hobbico; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; hobbico.com.

NEED **HELP?**

Send your "Troubleshooting" questions and comments to troubleshooting@airage.com, or mail them to "Troubleshooting," c/o *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA.

HPI Savage 21 Nitro Steel Combo

This new 52 tooth Spur and 14 tooth Clutch Bell are CNC machined from solid steel and then hardened for unmatched performance and durability.
RRP 7052

NEW

HPI Savage 21 Nitro Vented Flywheel

Aluminum vented flywheels move air over clutch bell, improving performance and cooling.
RRP 7000

NEW

Stealth Spurs

These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any Associated or HPI electric car or truck.
RRP 1860 thru RRP 1896

Electric Car And Truck Pinions:

48P Absolute Series Pinions

Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone!
Available In 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions

They're lightened, hard coated and precision cut.
Available in 48P in 16T thru 28T, and 64P in 24T thru 38T.
RRP 30XX (48P) and RRP 31XX (64P)
Only $5.25

48P Hard Nickel Plated Steel Pinions

These precision cut gears have an extremely hard coating that makes them really last.
Available in 12T thru 35T.
RRP 1012 - RRP 1035

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HEAD 2 HEAD

B4 VS. XXX

Associated RC10 B4 Stealth vs. Team Losi Triple-X Kinwald Edition

by the *RC Car Action* team

There are lots of RC rivalries, but none as famous or as closely matched as Team Associated versus Team Losi. Both brands do battle on the pavement and in the dirt with trucks and touring cars, but the quintessential category for America's premier carmakers is the 2WD buggy class. Ever since Team Losi dared to pit its JRX2 against the mighty Associated RC10 way back in 1986, it has been nothing but elbows and knuckles for these patriotic players. Fast-forward to today, and both companies are still at it. Team Losi's Triple-X Kinwald-Edition platform is still the "factory works" buggy to beat, and Associated has answered Losi's charge with the B4—our "2003 Car of the Year"—and the new standard-bearer for the storied RC10 series. So, which buggy truly is the best?

Rules of Engagement

Our goal in testing the B4 and Triple-X was to reveal their handling traits "out of the box" with stock equipment (minus tires), identical horsepower and equal rollout. But we didn't feel it would be fair for one car to be at a disadvantage simply because its manual-suggested setup wasn't as well suited to the test track as the other car's. We also didn't want a driver with extensive experience with a particular brand to slap on his well-sorted SoCal setup and unfairly mop up the track. So, if a car was clearly at a disadvantage, we decided that preload, battery position and camber changes should be allowed. These are simple changes that any racer would experiment with first. Changes to stock equipment and the relocation of shocks and camber links were not allowed, simply because the introduction of that many tuning variables would make it impossible to test the cars fairly within a reasonable time.

Best buggy battle

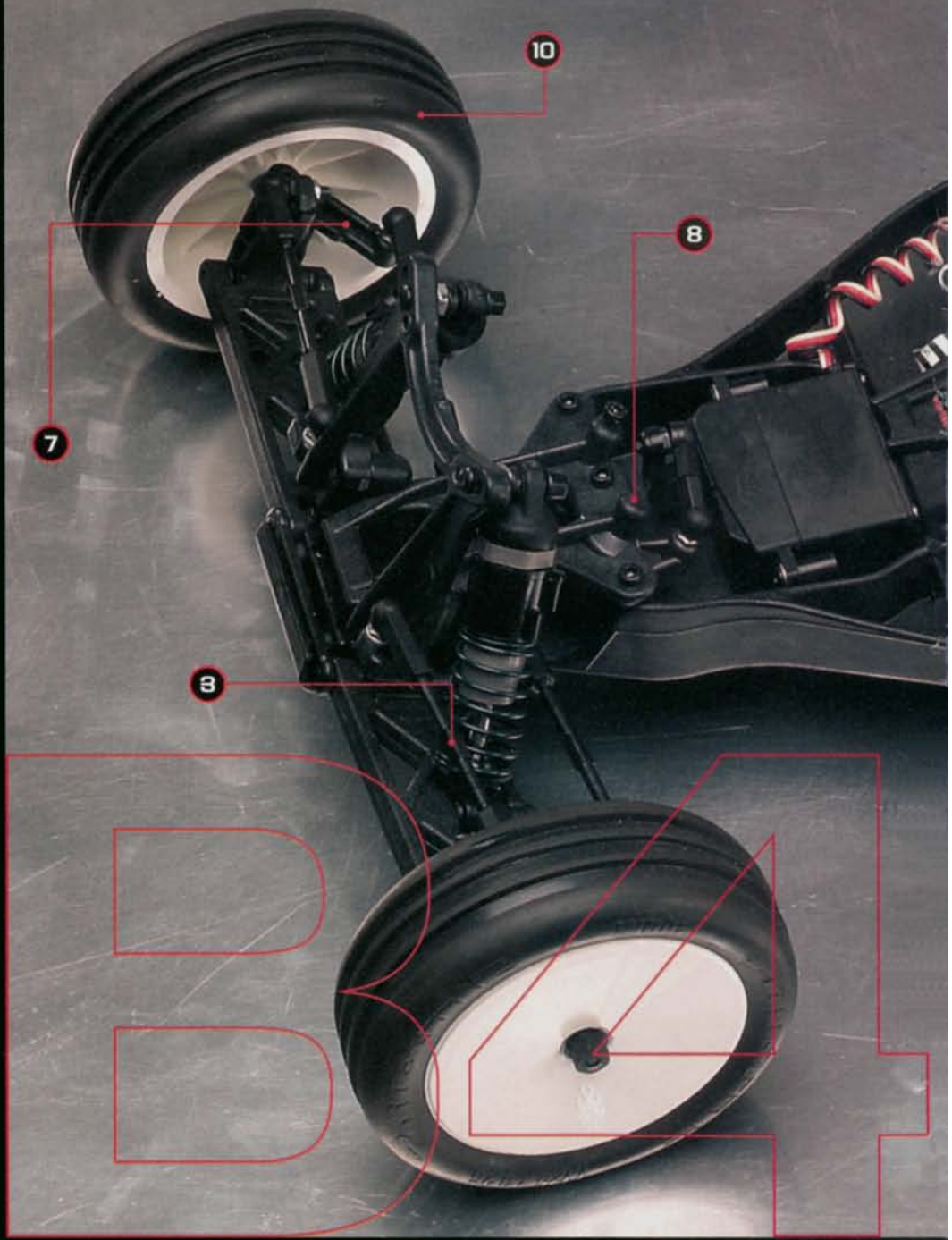
TEAM ASSOC

ALTHOUGH THE RC10 SERIES IS MORE THAN 15 YEARS OLD, ONLY THREE DESIGNS HAVE PRECEDED THE B4: the original RC10, the B2 and the B3. Sure, there were many running changes to the cars, but all of Associated's countless victories have been won using these three platforms. That's a tough act to follow, so Associated's engineers definitely wanted to get the B4 right before springing it on the world. We'd say they succeeded; after all, we did choose the B4 as our "2003 Car of the Year." But don't go looking for wild new features. From its steel turnbuckles and aluminum Team shocks to its ball differential and slipper-clutch-equipped, 3-gear transmission, the B4 is really just a refinement of standard racing buggy stuff. It's the details that matter: the suspension geometry is cutting edge; the ball differential is larger and stronger (in fact, it's from the RC10 GT nitro truck); the slipper clutch is a new, dual-pad design; and the entire chassis has been shaved, trimmed and tweaked for the lowest possible center of gravity.

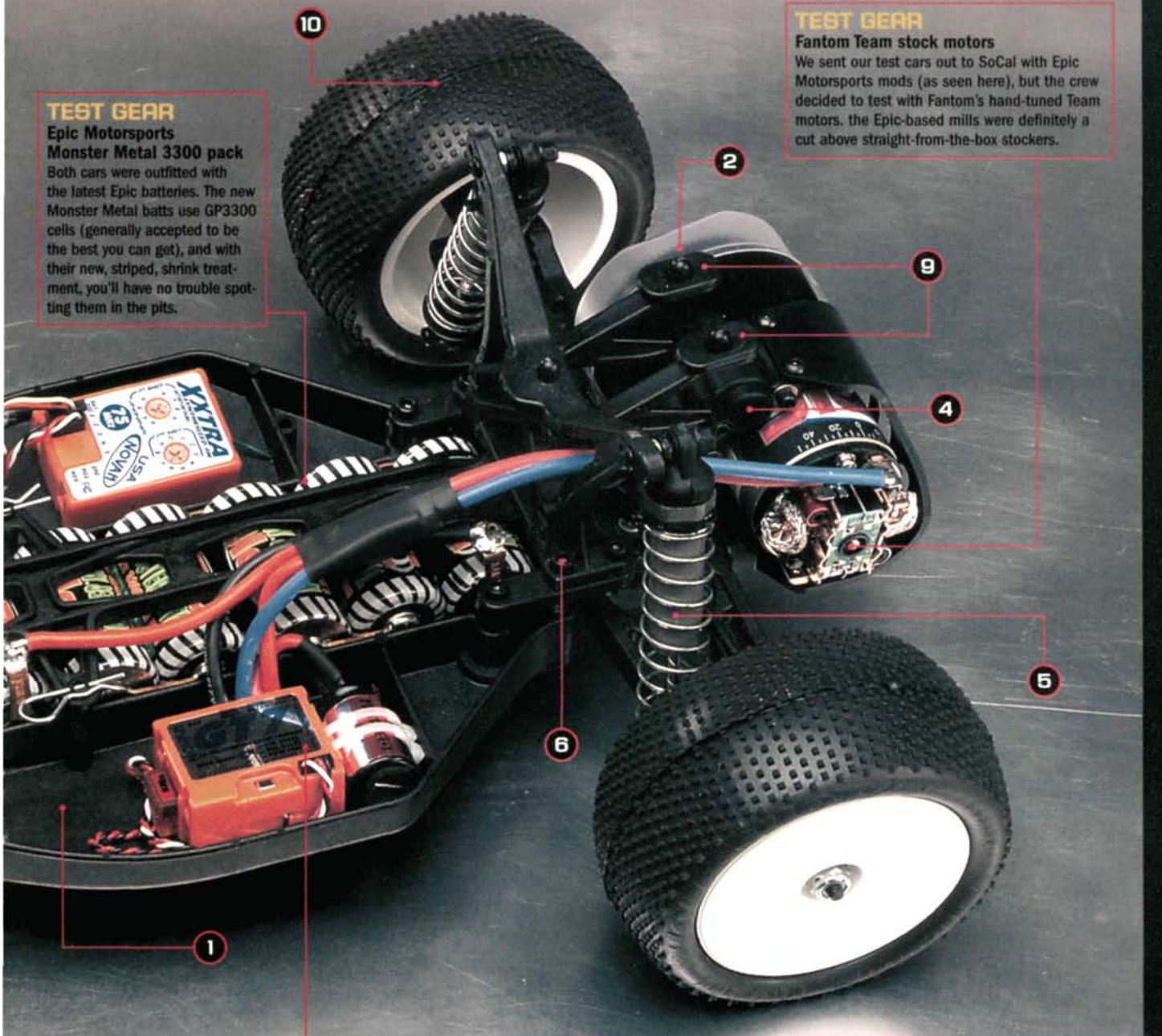
The B4 is the first RC10 to use a molded front shock tower, and much of the car's hardware is beefy 5-40 instead of the usual 4-40. Trailing axles replace the B3's in-line design.

A new dual-pad slipper uses hard-anodized pressure plates to squeeze hex-shaped pads that are keyed to the B4-specific spur gear. This shot also shows the molded wing mounts—no more wing-wire!

Associated's time-tested Team shocks return with the B4, but they're shorter than those of previous RC10s. The "short" shocks are a key component of the B4's low-profile design.



ATED B4



TEST GEAR

Epic Motorsports Monster Metal 3300 pack

Both cars were outfitted with the latest Epic batteries. The new Monster Metal batts use GP3300 cells (generally accepted to be the best you can get), and with their new, striped, shrink treatment, you'll have no trouble spotting them in the pits.

TEST GEAR

Fantom Team stock motors

We sent our test cars out to SoCal with Epic Motorsports mods (as seen here), but the crew decided to test with Fantom's hand-tuned Team motors. the Epic-based mills were definitely a cut above straight-from-the-box stockers.

TEST GEAR

Novak Electronics GT7 speed control

We installed the latest version of Novak's best racing speed control: the GT7. Novak recently updated the fully programmable ESC with a built-in "Schottky diode module" (hidden under the black heat-shrink) that replaces the traditional solder-on diodes to deliver longer run times, higher rpm and cooler operation.

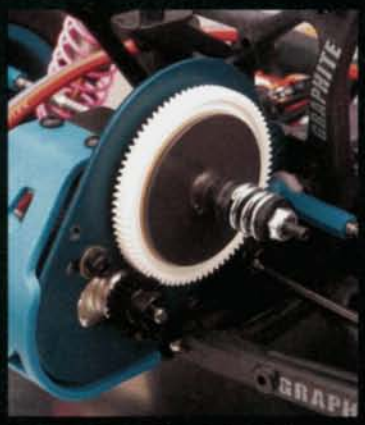
B4 FEATURES

1. Composite-plastic chassis and suspension parts
2. Dual-pad slipper clutch
3. Steel turnbuckles
4. 2.6:1 Stealth transmission with steel top shaft
5. Hard-anodized, Teflon-coated aluminum shocks
6. Heavy-duty 5-40 hardware
7. Trailing-axle steering geometry
8. Steering bellcranks are tilted back to match the kingpin angle
9. Integrated wing mounts
10. Pro-Line Wide Body M3 front tires and Holeshot M3 LP rear tires

TEAM LOSI T

TEAM LOSI HAS RACKED UP A LOT OF FIRSTS OVER THE YEARS. NOTABLES INCLUDE: FIRST TO USE A PLASTIC chassis in a competition during the tub-and-plate era; first to use molded graphite-composite chassis components; first with a dual-pad slipper clutch; and first to offer a "signature" kit with all the option parts in one box. The Triple-X Kinwald Edition buggy exemplifies all those firsts and more, from its molded-graphite chassis and suspension parts to its threaded shock bodies, one-piece aluminum top shaft and Lunsford titanium turnbuckles. The Triple-X was also the first buggy to use the "camber links in front, shocks in back" front-suspension design, and it basically set a new standard for electric buggies when it debuted in 1999. Yep, that's right, 1999; it's hard to believe the Triple-X has been around that long! You can credit the Team Losi engineers for getting it so "right" in the first place, but don't count on them to sit around gloating; odds are they're scheming up a new X-buggy as you're reading this.

Instead of putting them in the wheel itself, the Triple-X holds the front-wheel bearings in the steering hub. Lunsford titanium turnbuckles, a complete graphite kit and blue ball cups are all part of the Kinwald-Edition package.



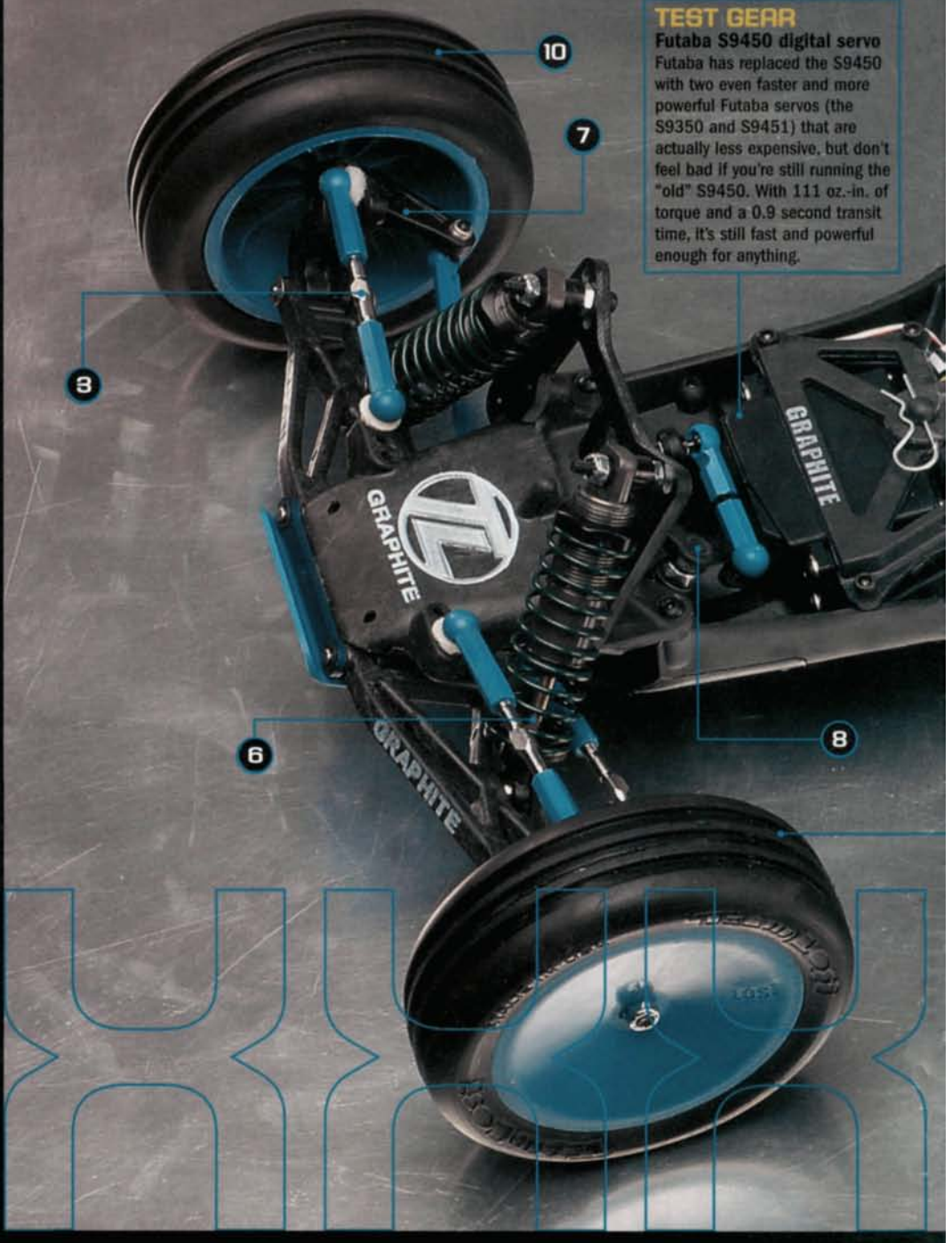
Losi was first with a dual-pad slipper clutch, and the design is still one of the smoothest. Hard-anodized pressure plates keep the pads and spur gear keyed together.

Threaded-body shocks allow fine preload adjustments, and Losi's bottom-fill shock design is easy to build. MIP CVDs are standard.

TEST GEAR

Futaba S9450 digital servo

Futaba has replaced the S9450 with two even faster and more powerful Futaba servos (the S9350 and S9451) that are actually less expensive, but don't feel bad if you're still running the "old" S9450. With 111 oz.-in. of torque and a 0.9 second transit time, it's still fast and powerful enough for anything.



RIPLE-X

TEST GEAR

Novak Electronics XXtra receiver

We let the test drivers use their personal radios to control the buggies, and despite all the frequency changes, we never lost a receiver crystal—because we didn't use any! Just tweak a couple of dials, and the XXtra is on your channel.

TEST GEAR

Team Losi Wide Body and X-2000 tires

We needed tires that would hook up the buggies on the unique SoCal track surface, and all the fast guys agreed on the same tire combination: Team Losi Wide Body ribbed (silver compound) front tires and Team Losi X-2000 (red compound) rear tires with Trinity gray, extra-firm foam inserts.

TRIPLE-X FEATURES

1. Graphite-composite chassis and suspension parts
2. Dual-pad slipper clutch
3. Lunsford titanium turnbuckles
4. 2.43:1 transmission with aluminum top shaft
5. Hard-anodized, bottom-filled aluminum shocks
6. Low-friction, titanium-nitride shock shafts
7. Trailing-axle steering arms with integrated ball bearings
8. Steering bellcranks tilted backward to match the kingpin angle
9. Integrated wing mounts
10. Team Losi four-rib, silver-compound, front tires and X-2000, red-compound, rear tires

george

jason

shane

nick

mike

bruce

drivers' notes

TEAM ASSOCIATED RC10 B4 STEALTH

GEORGE GONZALEZ: The B4 was an absolute rocket off the line and out of the corners. It had tons of steering, but the rear end never felt as if it wanted to swing around no matter how hard I mashed on the throttle when exiting the corners. The buggy had a slight nose-down attitude in the jumps, but all it took was a blip of the throttle to get the nose back up again. The B4's box-stock setup was not far off the mark—for my driving style, anyway.

JASON SAMS: The B4 was quick in the corners and felt on edge, which is how I like a 2WD buggy to feel. When in the air, the front end wanted to dive, and that required some serious throttle control. I think changes in the front suspension setup would have helped its in-flight attitude. Considering this was my first time to run a B4, I was impressed!

SHANE WEAVER: I felt that the B4 was a fast car, but at times, it was a little difficult to keep on all four wheels. The B4 shot out of the turns like a bat out of hell, but the minute I ran into a jump, the car would end up on its lid. I feel that the B4 is a great car for the expert racer who can drive a car strapped.

NICK SAVA: The B4 has tons of steering and it was able to rotate and hold a tight line. It seemed to be tossed around more than I liked when in the whoops section, though. Overall, I feel the stock setup worked well for the conditions.

MIKE McDONNELL: I think the B4 has a better stock setup for this particular track, as I was able to get comfortable with the car within a few laps. It felt real smooth coming in and out of the corners and was all-around easier to drive.

BRUCE AIHARA: The B4 was easy for me to adapt to; within three laps, I was comfortable with the car. It has good low-speed steering and jumped very well. I can't wait for the Factory Team version! With a little suspension tuning, I'm sure the B4 will be even more dialed.

TEAM LOSI TRIPLE-X KINWALD EDITION

GEORGE GONZALEZ: The Triple-X felt a little loose on the damp and slippery SoCal track surface. I had to stay on my toes when I drove it. In the air, the car was a dream; it sailed nice and level over the jumps and mid-air attitude corrections were virtually unnecessary. The Triple-X tackled the whoops and the other bumpy sections of the track without getting out of shape, and that made it easy to drive it fast.

JASON SAMS: The Losi Triple-X was stable and a better jumper than the B4. In the corners, however, the car pushed and rounded off tight corners. This did not affect my times, which were faster with the steady Triple-X.

SHANE WEAVER: The Triple-X was smooth and stable. I was able to keep the car under control most of the time. When it came to the jumps, the car had no trouble maintaining its balance; it flew like an arrow shot from a bow. The Triple-X just didn't seem to accelerate as fast as the B4, but as a novice driver, I'll take stability over acceleration while I'm dialing in my driving skills.

NICK SAVA: The Triple-X was more stable and easier to drive than the B4. Its main drawback, however, was the lack of steering. The car turns in, but then it seems to wash out. I think that the Triple-X would have been faster than the B4 on a drier and looser track.

MIKE McDONNELL: I've driven the Triple-X at SoCal before, so I know that the stock setup isn't very good for these track conditions. The car felt nervous, and it didn't stay planted coming out of corners. It did jump pretty well, however, and it had decent acceleration, too. The car also felt more composed in the whoop sections. All the buggy needs is the right setup, but for the comparison, we ran the cars box stock.

BRUCE AIHARA: I thought that I would be faster with the Triple-X than the B4, since I own a Losi buggy. Boy, was I wrong! Compared with the B4, the Triple-X seemed to have a major push. It definitely took a little more finesse to get the car around the corners because the rear end was always scrambling for traction.

DRIVERS' PICKS

GEORGE GONZALEZ: B4 Stealth
Choosing a winner between these two cars isn't easy, and I would be perfectly satisfied with either car. The Triple-X felt more dialed in the rough sections of the track and was clearly a better jumper. The B4, on the other hand, accelerated quicker, turned in harder and its rear end always stayed planted. I've got to go with the car that got me around the track the fastest, and that car was the B4.

JASON SAMS: Triple-X Kinwald Edition
The Team Losi Triple-X felt planted everywhere, jumped great and never seemed to get out of shape. That added up to slightly faster lap times, making it my shootout winner.

SHANE WEAVER: Triple-X Kinwald Edition
Although my lap times with both cars were very close, the Team Losi Triple-X was easier for me to drive. I choose the Losi because of its planted, stable feel.

NICK SAVA: B4 Stealth
Both cars can be tuned to handle very well on virtually any track. The B4 happens to have a stock setup that seemed better suited to the track conditions that we were facing, but with a simple roll-center adjustment, I'm confident that I could have had the Losi on rails. We tested the cars box stock, however, and although my lap times were similar with both cars, I was a hair faster with the B4.

MIKE McDONNELL: B4 Stealth
Corner speed is where you make up time, so I choose the Team Associated B4 because it blew through the corners without scrubbing speed. This let me put in my fastest times.

BRUCE AIHARA: Triple-X Kinwald Edition
I'm really impressed with the B4. Team Associated has designed a winner, but the box-stock setup might be a bit too "on the edge" for beginners. The Losi's stock setup wasn't far off the mark for the damp and hard-packed conditions we ran it on, and I believe that first-time racers would be more successful with the Triple-X. I really like the B4, but I'm not ready to sell my Triple-X KE yet. I might change my mind when the Factory Team version is released, though.

scoreboard

TEAM ASSOCIATED **RC10 B4 STEALTH**

	George	Jason	Shane	Nick	Mike	Bruce
Acceleration	9	9	9	9	9	9
Turn-in	8.5	8.5	8	9	8	8
Transitional handling	9	9	8	8.5	8	8
Corner speed	9	9	7	8	7	8
Bump handling	7.5	7.7	6	9	8	9
Jumping	7	7	6	9	9	9
Total score	**50**	**50.2**	**44**	**52.5**	**49**	**51**
Total combined score	**296.7**					

TEAM LOSI **TRIPLE-X KINWALD EDITION**

	George	Jason	Shane	Nick	Mike	Bruce
Acceleration	7.5	8	7	8.5	9	7
Turn-in	8	8	7	8	7	6
Transitional handling	8	8.5	7	9	8	7
Corner speed	7.5	8	8	8.5	7	7
Bump handling	9	9	9	7	9	9
Jumping	9	9.5	9	8	7	9
Total score	**49**	**51**	**47**	**49**	**47**	**45**
Total combined score	**288**					

ON THE TRACK

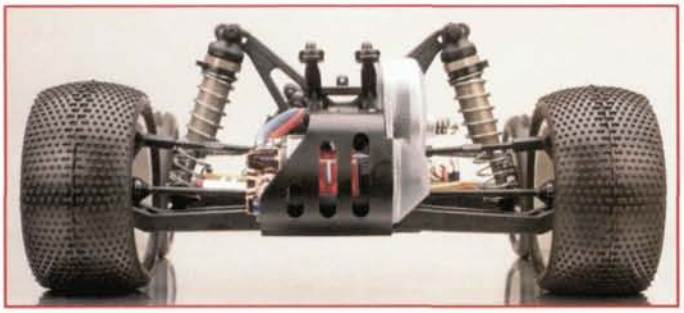
LAP TIMES	ASSOCIATED B4		LOSI TRIPLE-X	
DRIVER	BEST LAP	AVG. LAP	BEST LAP	AVG. LAP
George Gonzalez	**33.3**	**34.36**	**34.3**	**35.2**
Jason Sams	**31.3**	**32.6**	**31**	**31.68**
Shane Weaver	**33.9**	**37.45**	**36.7**	**37.46**
Nick Sava	**29.7**	**29.96**	**30.3**	**30.91**
Mike McDonnell	**30.2**	**30.83**	**31.3**	**31.85**
Bruce Aihara	**31.9**	**33.98**	**32.5**	**33.25**

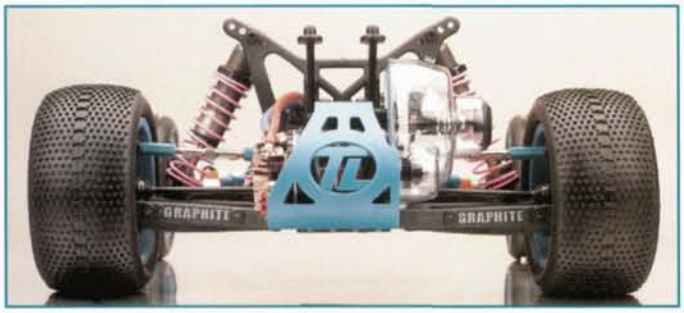
RACE PLACE: socal raceway

Some of the fastest drivers in Southern California race at SoCal Raceway in Huntington Beach. In fact, many consider the competition on a typical Saturday-night club race at SoCal to be just as tough as at the Off-Road Nats. The track crew regularly changes the track layout to keep the drivers on their toes, and we tested the buggies on a brand-new track with virgin dirt.

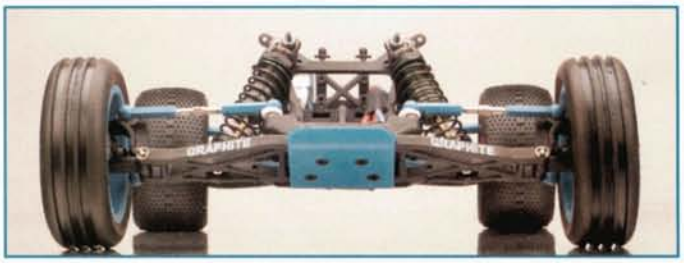
The layout was tight and technical, with plenty of jumps, whoops and other obstacles to keep driving challenging. To make things even more difficult, the newly prepared track was damp, hard-packed and slippery. A big "Thanks" to shop manager Mike Tarkington for his hospitality and for allowing us to use the track and the lap-counting system.

side by side





Here's a rear view of the B4 (top) and the Triple-X (bottom). Notice how the B4's kinked arms sit slightly lower than the Triple-X's arms. Shock-tower heights are nearly identical, but the B4's shocks are mounted closer to vertical.



Because of its "flipped" front shock tower, the B4 (top) appears taller than the Triple-X, but the shock locations are nearly identical. The B4 also has a "snub-nose" look thanks to its nearly sweep-less suspension arms, compared with the Triple-X's swept arms and more prominent "bow."

The latest version of the Stealth transmission (left) uses the RC10GT's 52-tooth ball differential for greater durability. The top shaft and top gear are machined from steel as one piece, and rubber-sealed bearings are standard. The Triple-X tranny (right) has an equally large differential and trims a few grams with a one-piece, machined-aluminum top shaft and top gear. The parts spin on metal-shielded ball bearings.

The B4's silhouette is red and the Triple-X's is blue; the cars are lined up by their axles (note that the Triple-X's wheelbase is slightly shorter). The Triple-X chassis is roomier in the rear, and that lets you place the receiver and ESC farther aft if you prefer a greater rear-weight bias. The B4 is significantly narrower in the nose section, and it has shorter front and rear overhangs.

specifications

	Team Associated RC10 B4	Team Losi Triple-X Kinwald Edition
Wheelbase*	10.74 in. (10.78, 10.73, 10.7)	10.45 in. (10.45, 10.52, 10.6)
Width	9.5 in. (241mm)	9.5 in. (241mm)
Weight, as tested	53.8 oz. (1,524g)	52.6 oz. (1,492g)
Kick-up	25 deg.	25 deg.
Front-axle position	Trailing	Trailing
Rear anti-squat (deg.)*	3 deg. (0, 1, 2, 3)	3 deg.
Rear toe-in (deg.)*	3 deg.	3 deg.
Caster (deg.)	25 deg. (20, 25, 30)	25 deg.
Front arm span (inboard hinge pin to outboard hinge pin)	2.87 in. (73mm)	2.6 in. (66mm)
Rear arm span (inboard hinge pin to outboard hinge pin)	2.89 in. (74mm)	2.9 in. (74mm)
Front inboard hinge-pin spread	1.5 in. (38mm)	1.58 in. (40mm)
Rear inboard hinge-pin spread	1.38 in. (35mm)	1.5 in. (38mm)
Front shock positions (U/L)	3/2	3/3
Rear shock positions (U/L)	3/2	4/2
Front camber-link positions (inner/outer)	2/2	3/2
Rear camber-link positions (inner/outer)	2/2	3/2
Ackerman positions (inner/outer)	2/1	2/1
Shock bodies	Hard-anodized, Teflon-coated	Hard-anodized, threaded-body
Shock shafts	Plated steel	Titanium nitride
Turnbuckle type	Steel	Lunsford titanium
Transmission ratio	2.6:1	2.43:1
Top-shaft type	Steel	Hard-anodized aluminum
Slipper clutch	Dual pad	Dual pad
Drive axles	MIP CVD	MIP CVD
Ball-bearing type	Rubber-sealed	Teflon-shielded
Included tires (F/R)	Pro-Line M3 Wide Body/ Pro-Line M3 Holeshot LP	Team Losi Wide Body silver compound/ Team Losi X-2000 red compound
Price *(varies with dealer)*	$199.99	$239.99

**First figure is the stock setting; additional figures in parentheses are settings possible with included parts.*

THE WINNER

The drivers split three to three in their picks, so let's look at the numbers. The B4's fastest lap was a 29.7, while the Triple-X posted a best of 30.3. When each driver's lap times were averaged, the B4 came up as the faster car: 33.19 seconds per lap versus 33.39 seconds for the Triple-X. The B4 scored higher in the drivers' ratings: 296.7 points to Team Losi's 288 points. There you have it: the Associated B4 wins. But does that make it the better car? On another track, the Triple-X may have been faster, and if we could give each driver a full racing season to sort out the car to his liking, either one could come out on top—which is exactly what happens on the national circuit and on local tracks across the country.

And what about value? The Triple-X Kinwald Edition costs about $40 more than the B4, but it has many more features: threaded shock bodies, titanium-nitride shock shafts and a full complement of graphite parts, to list a few. Purchased separately, these parts would set you back a lot more than $40, so the Kinwald Edition is a great buy—at least, until the inevitable Factory Team B4 with similar bonus features appears.

It looks as if the Associated versus Team Losi battle will continue to rage hotter than ever. But right here, right now, for our drivers, the B4 emerges as the better buggy in a very close contest.

SOURCE GUIDE

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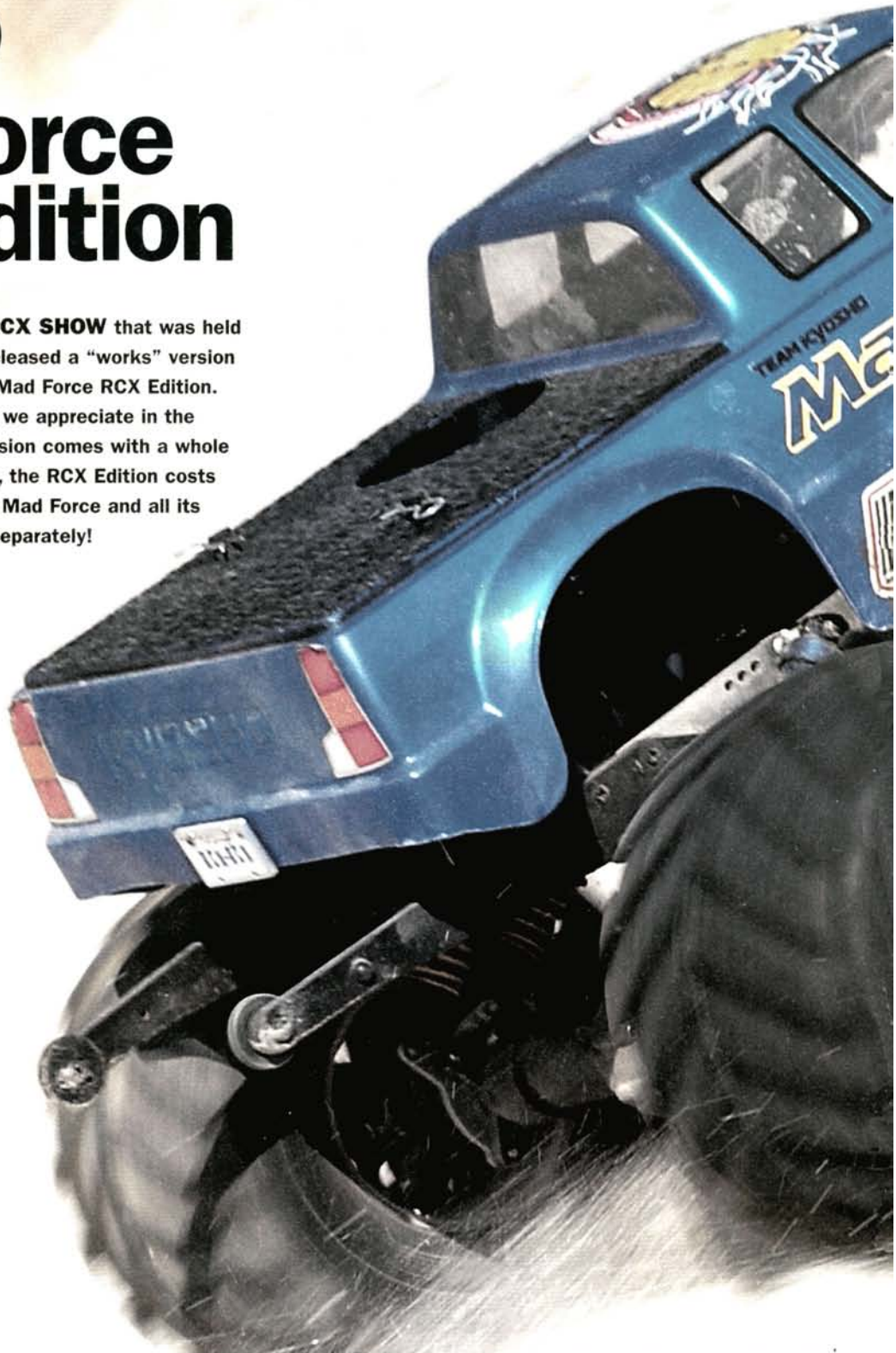
TEAM LOSI distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

track test

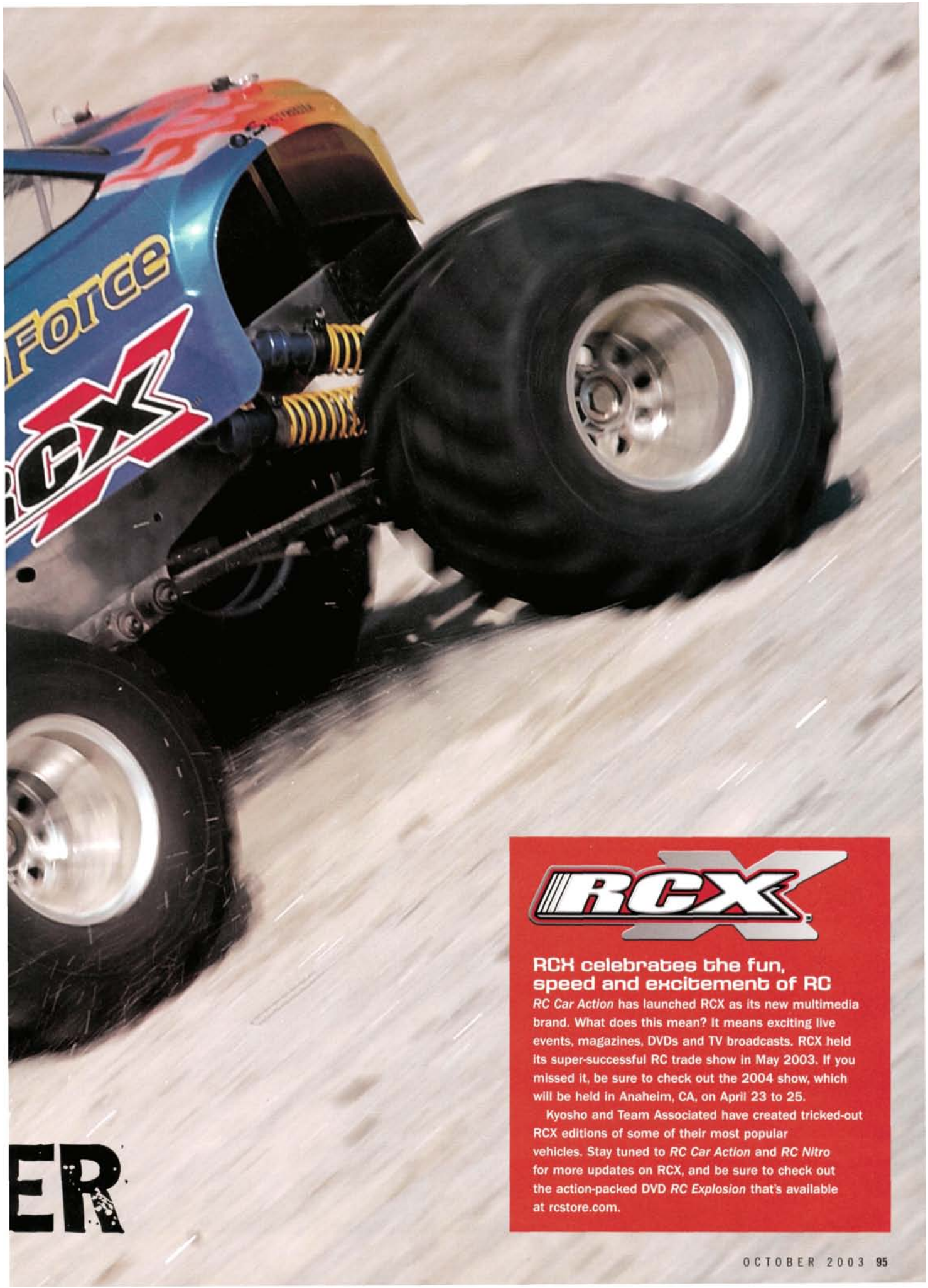
1/8-SCALE NITRO by Jason Sams

Kyosho
Mad Force RCX Edition

IN CONJUNCTION WITH OUR RCX SHOW that was held in Anaheim, CA, Kyosho recently released a "works" version of its popular Mad Force 4x4: the Mad Force RCX Edition. The truck has all the features that we appreciate in the original mega-monster, but this version comes with a whole host of extra hop-ups. Lucky for us, the RCX Edition costs significantly less than it would if a Mad Force and all its included hop-ups were purchased separately!



MONSTER MASH



RCX celebrates the fun, speed and excitement of RC

RC Car Action has launched RCX as its new multimedia brand. What does this mean? It means exciting live events, magazines, DVDs and TV broadcasts. RCX held its super-successful RC trade show in May 2003. If you missed it, be sure to check out the 2004 show, which will be held in Anaheim, CA, on April 23 to 25.

Kyosho and Team Associated have created tricked-out RCX editions of some of their most popular vehicles. Stay tuned to *RC Car Action* and *RC Nitro* for more updates on RCX, and be sure to check out the action-packed DVD *RC Explosion* that's available at rcstore.com.

THE BIGGEST UPGRADE ON THE MAD FORCE RCX IS THE ADDITION OF AN O.S. RG-X ENGINE

Dual oil-filled shocks support the chassis. The yellow springs are softer than the ones included with the original truck.

Below: the RCX Edition of Kyosho's Mad Force comes with a rear universal drive shaft. It runs a little more smoothly than the stock dogbone on the standard version does.

SPECIFICATIONS

MANUFACTURER Kyosho
MODEL Mad Force RCX Edition
DISTRIBUTOR Great Planes
SCALE 1/8
PRICE $650
Varies with dealer

DIMENSIONS
Wheelbase 12.5 in. (318mm)
Width 16.25 in. (413mm)

WEIGHT
Total, as tested 144 oz. (4,082g)

CHASSIS
Type Ladder-style
Material 3mm aluminum

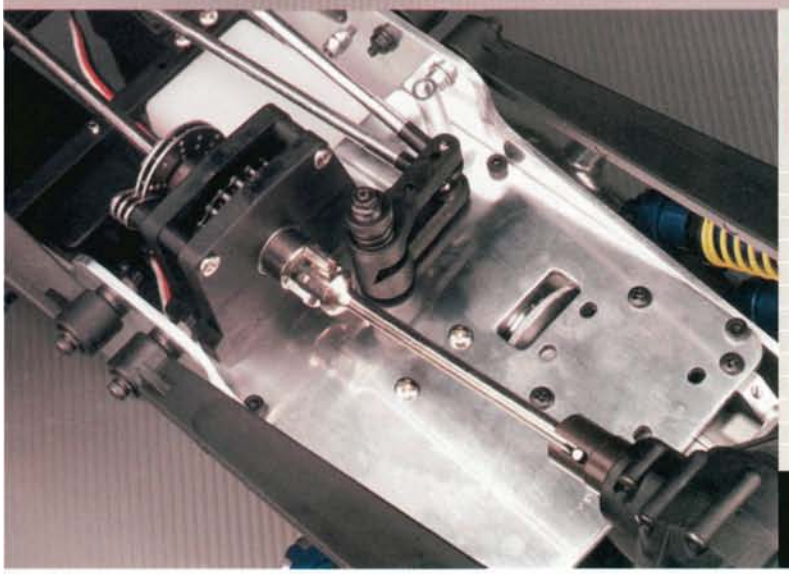
DRIVE TRAIN
Type 3-speed, chain drive w/solid axles
Primary 14-, 17-, 20T clutch bell/46-, 43-, 40T spur gears
Transmission ratio 7.82:1
Final drive ratio (1st) 25.69:1; (2nd) 19.76:1; (3rd) 15.64:1
Drive shafts (F/R) Solid axles
Differentials 4-gear bevel with O-ring and gasket-sealed plastic housing
Bearing type Metal-shielded

SUSPENSION (F/R)
Type Torsion-link, trailing arm with solid axles
Shocks Eight, aluminum-body, oil-filled shocks w/volume-compensation bladder

WHEELS
Type One-piece plastic, satin-chrome finish

TIRES
Type Kyosho chevron tread

ENGINE AND ACCESSORIES
Engine O.S. .21 RG-X(P)
Carburetor 2-needle slide
Pipe Tubular tuned pipe
Manifold Tubular, round port (O.S. designed for .21 RG-X)
Fuel tank 125cc with internal, stone filter



RCX-tras
you get more than you bargained for!

At $650, the Mad Force RCX Edition may sound a little pricey, but it's a whole lot better than $900! That's roughly what you would pay if you were to purchase each item individually (the cost of the standard kit and upgrades). Here's a breakdown of all the upgrade parts and their prices.

DESCRIPTION	ITEM NO.	PRICE
O.S. Max .21RG (P)-X	LXLU03	$140
Universal center shaft	KYOC6357	25
Special manifold	KYOC6605	26
Hard side plate	KYOC2959	37
Underplate	KYOC6606	16
Double shock stay	KYOC5492	28
Turbo long shock	KYOC0538	90 ($45/set)
Ultra-soft springs	KYOC5493	32 ($16/set of four)
Special steering-rod set	KYOC5495	13
O.S. .21RG engine mount	KYOC3603	25
Bell guide	KYOC6607	5.50
Aluminum steering crank	KYOC2065	31
		Total $468.50

Standard Mad Force: $430 + upgrades ($468.50) = $898.50
Mad Force RCX Edition: $650
Total savings: $248.50

KIT FEATURES

CHASSIS. The Kyosho Mad Force RCX Edition uses the same style chassis that's found in the standard kit, but it has been upgraded to include hard, polished side plates and a lower deck plate. The twin, 3mm ladder-plate chassis is joined using a combination of plastic and aluminum braces, and additional chassis strength is gained when the lower deck/engine mounting plate is bolted into place. The assembled chassis package is very rigid. A well-sealed battery box sits atop the chassis, and there's plenty of room inside for your receiver and battery pack.

DRIVE TRAIN. The Mad Force RCX uses the same close-ratio, 3-speed transmission and plastic spur-gear/chain-drive setup as is found in the stocker, but what's new in this version is the rear universal-joint center shaft; it adds reliability and provides a smoother power delivery.

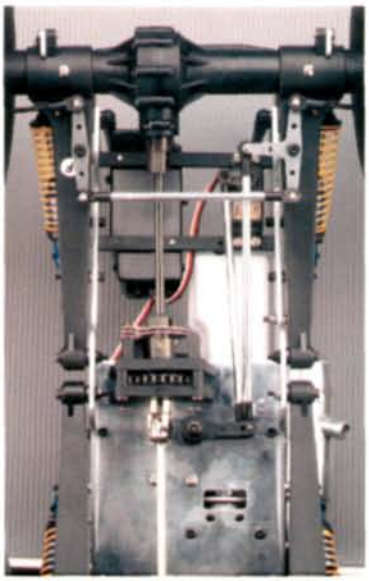
The most unique features of the Mad Force are the straight axles that use heavy-duty sealed diffs in both the front and the rear. These are the same units that Kyosho uses in the Inferno MP7.5 buggy, and these diffs have a solid reputation for reliability and performance. Thanks to an O-ring and gasket seal design that allows them to be filled with the appropriate viscosity of silicone fluid, you can tune them for your driving style or for differing terrains.

Because it takes the brunt of the abuse, the rear differential is made of hardened-steel parts, and the front diff is equipped with cast-steel ring and pinion gears. Just like the stock Mad Force, the RCX Edition is stopped with two vented-steel disc brakes.

SUSPENSION AND STEERING. As in the stock machine, the RCX Mad Force carries the proven 2-link suspension system. Because of its distinctive flat design, the links flex torsionally, so the axle tilts and articulates independently on each side of the chassis. Although it may look exceptionally simple, the system works quite well—less complexity equals fewer parts to break.

The major suspension difference between the two trucks is that the RCX version runs with dual shocks on each corner instead of only one. The kit comes with eight, blue-anodized, high-volume, aluminum big-bore shocks and ultra-soft springs.

As for the steering assembly, the RCX Edition uses a heavy-duty, alloy steering-rod set that is much beefier than the stock unit, and the truck has been upgraded with a set of aluminum steering bellcranks.



Aluminum rods control the truck's steering, and aluminum bellcranks improve the steering's durability.

ENGINE AND ACCESSORIES. By far, the biggest upgrade on the Mad Force RCX is the addition of an O.S. RG-X engine with recoil start. It is a powerhouse; according to O.S., it puts out almost 2hp at 30,000rpm. It comes with an oversize, charcoal-gray-anodized cylinder head, a ball-bearing-supported crankshaft, a rear exhaust and a slide-valve carb. This is no chumpy engine—it's a hop-up worth $140! The package also includes an O.S. engine-mount kit, a bell guide for the O.S. pilot shaft and a tubular manifold.

BODY, WHEELS AND TIRES. The RCX truck comes with the same body, wheels and tires that you'll find on the stock kit. The deep-lug chevron tires come mounted on satin-chrome-finish wheels. The tires are more than 6 inches tall; the height helps the monster roll over most obstacles with ease.

The only "body" difference is the inclusion of RCX decals; they will allow you to show everyone that what rumbles underneath your hood is no mild-mannered monster!

Do you want reliable horsepower? You'll get it with the RCX Mad Force. An O.S. .21 RG-X RG pull-start engine is included in the kit, along with a special engine mount and a header.

BUILDING & SETUP TIPS

Take your time when building your new Mad Force RCX Edition. These tips will help the kit go together more smoothly:

FRONT AND REAR AXLES. There are clear indicators for which axle is the front and which is the rear, but to be safe, use masking tape and a marker to label the axles "front" and "rear." If installed improperly, the truck will run backward!

STEERING BELLCRANKS. When you install the steering bellcranks, make sure that you mount them on the underside of the suspension arm.

STEERING KNUCKLES. Make sure that the front and rear steering knuckles are mounted so that the lever arm faces toward the center of the truck.

BRAKES. The Mad Force's brakes are ultra-powerful; replace the stock piece of fuel tubing on the brake linkage with a soft spring for more efficient brake control.

STEP 15. Each chassis plate has a front and a side, so pay attention during the assembly. If you transpose the pieces, you'll be partway through the assembly before you find holes in the wrong places. Then you'll have to disassemble and reinstall the parts to make it right.

STEP 41. Kyosho's instructions tell you to make holes in the tires so they can "breathe," but it's better to make holes in the rims instead. We recommend that you drill an ⅛-inch-diameter hole in the conical section of the rim, behind the wheel's "face." And to help the tire stick to the rim better, remove the plating from the bonding areas of the rims. Although you can sand yhe plating off by hand, it will come off much faster if you use a wire wheel bit in a rotary tool.

THREAD-LOCK. Use liberal amounts of medium-strength thread-lock on the engine-mounting screws and all metal-to-metal contacts.

YOU'LL NEED

- Transmitter and receiver
- Steering and throttle servos
- Receiver pack
- Glow plug
- Glow starter
- Fuel
- Fuel bottle
- Tire glue
- Lexan-compatible paint

THE COMPETITION

	ENGINE	TRANSMISSION	REVERSE	SHOCKS	WHEELBASE	STARTER	RADIO	RTR/KIT	PRICE*	REVIEWED
DuraTrax Thunder Quake	.21	2-speed	Yes	4	14.1 in. (360mm)	Pull	DuraTrax	RTR	$520	4/02
Kyosho Mad Force RCX	.21	3-speed	No	8	12.5 in. (318mm)	Pull	Not included	Kit	$650	10/03
Tamiya Terra Crusher	.18	2-speed	Yes	8	14.1 in. (360mm)	Electric	Tamiya AD Spec	RTR	$409	3/02
Thunder Tiger EK-4	.70	Single-speed	No	7	12.4 in. (315mm)	Shaft	Not included	Kit	$520	1/02
Traxxas T-Maxx	.15	2-speed	Yes	8	12 in. (305mm)	Electric	Traxxas TQ3	RTR	$409	11/02

*Prices vary with dealer.

PERFORMANCE

Before ripping up the dirt, I spent an hour or so breaking in the new O.S. engine. After an effortless start, I drove the truck in large slow circles to maintain an engine temp of around 200 degrees. I like to have five tanks of fuel or so through an engine before I lean it out for extra performance.

When the break-in was over, I headed out to a new-home construction site where piles of two-by-fours, sandbags and a large, open, dirt field provided the perfect venue for getting a taste of the Mad Force RCX's performance. I leaned out both the high- and low-end needles so that the truck was performance-tuned for an accurate test. The engine started right up after only a few tugs on the pull-starter.

THE MAD FORCE RCX HAS PLENTY OF POWER, THANKS TO THE ENGINE UPGRADE.

The Mad Force RCX has plenty of power, thanks to the engine upgrade. The O.S. RG-X(P) engine is definitely a big improvement over the stocker. Acceleration was crisper and significantly stronger, but speed is where this truck really shines; I estimate a top speed of about 45mph. When it hit second and third gear, it was flat-out haulin'. In addition, the Mad Force is the "wheelie king." From a dead stop, simply stab the throttle and sit back and watch as the front tires climb skyward. I didn't want to wad up the truck in a pile of wood or building supplies before my test was over, so I decided to take it easy after I blew off some adrenaline on my high-speed runs.

LIKES

- Suspension and tires make rock crawling easy.
- Realistic looks.
- Spacious battery/receiver box.
- 3-speed transmission.

I drove it to a pile of two-by-fours to see how the truck would handle obstacles. The pile of wood was no match for the Mad Force RCX; it easily crawled over the wood, thanks to its abundant ground clearance, decent axle articulation and the traction from those beefy tires. The truck's crawling ability is one of its biggest attributes, but landing jumps can be somewhat sketchy. I launched the truck off 2-foot dirt mounds to see how the Mad Force RCX took to the air; it flies straight and level, but the landings are a little bouncy when it falls from 2 feet or higher.

I didn't run into any problems as far as breakage is concerned. Tumble after tumble proved that the durability of this monster should not be a big concern. I will, however, stay on the ground and find things to climb or crawl over because that kind of bashing is really fun with a truck like this.

The brakes are very strong, and it's easy to endo if you don't use a light touch. For better braking power, check out my tip in "Building and setup tips."

I'll definitely give the Mad Force RCX a thorough cleaning so I can go back to the site for another shredding session before those houses are built.

THE VERDICT

The Mad Force RCX will find its way into many monster truckers' hearts because of its fun driving characteristics. Pulling wheelies, climbing dirt hills and just plain bashing around are all a total blast with this truck. The O.S. RG-X(P) engine truly rips and is extremely reliable. Additionally, the included hop-ups will prevent you from spending a ton of extra cash at the hobby store (and, at the same time, will make your friends jealous). The 3-speed tranny will also allow you to walk on by everyone else's trucks as well. When this truck kicks into third gear, there aren't too many trucks that can hang!

DISLIKES

- Suspension is bouncy when jumping.

RATING THE KYOSHO MAD FORCE RCX EDITION

	POOR / FAIR / GOOD / VERY GOOD / EXCELLENT
INSTRUCTIONS	The illustrations in the instructions are good, but additional how-to written instructions would have been helpful.
PARTS FIT AND FINISH	Everything works really smoothly—no flashing to remove or binding problems to resolve.
ACCELERATION	This monster accelerates really well, which makes for some fairly easy wheelie-poppin'.
CORNERING ABILITY	Considering its size, the Mad Force RCX is pretty nimble—thanks to its powerful high-torque servos.
BUMP & JUMP HANDLING	The big tires float over bumps with ease, but landings are a little bouncy.
DURABILITY	Impressive, considering how many times we crashed the Mad Force during our test.

ESTIMATED TOP SPEED 45MPH* **BEST BUYER** Monster truck enthusiast who's looking for something different and fast

*Top speed varies with equipment used.

TEST GEAR

O'Donnell
20%-nitro fuel
O'Donnell fuels are most recognized for the anti-foaming agents that prevent tune-altering air bubbles. The fuel also helps your engine produce ridiculous horsepower. During my test, the engine ran exceptionally well; that's a testament to the well-engineered fuel that allowed a consistent tune while providing roost-worthy power.

Additional items used to complete the Kyosho Mad Force RCX:

Futaba 3PDF transmitter

Futaba S9450 steering servo

Futaba S9250 throttle servo

Team Orion 1200mAh receiver pack

SOURCES

DURATRAX/O'DONNELL distributed by Great Planes Model Distributors; duratrax.com.

FUTABA; distributed exclusively by Great Planes Model Distributors Co.; futaba-rc.com.

GREAT PLANES MODEL DISTRIBUTORS (217) 398-6300; (800) 682-8948; greatplanes.com.

KYOSHO distributed by Great Planes Model Distributors; kyosho.com.

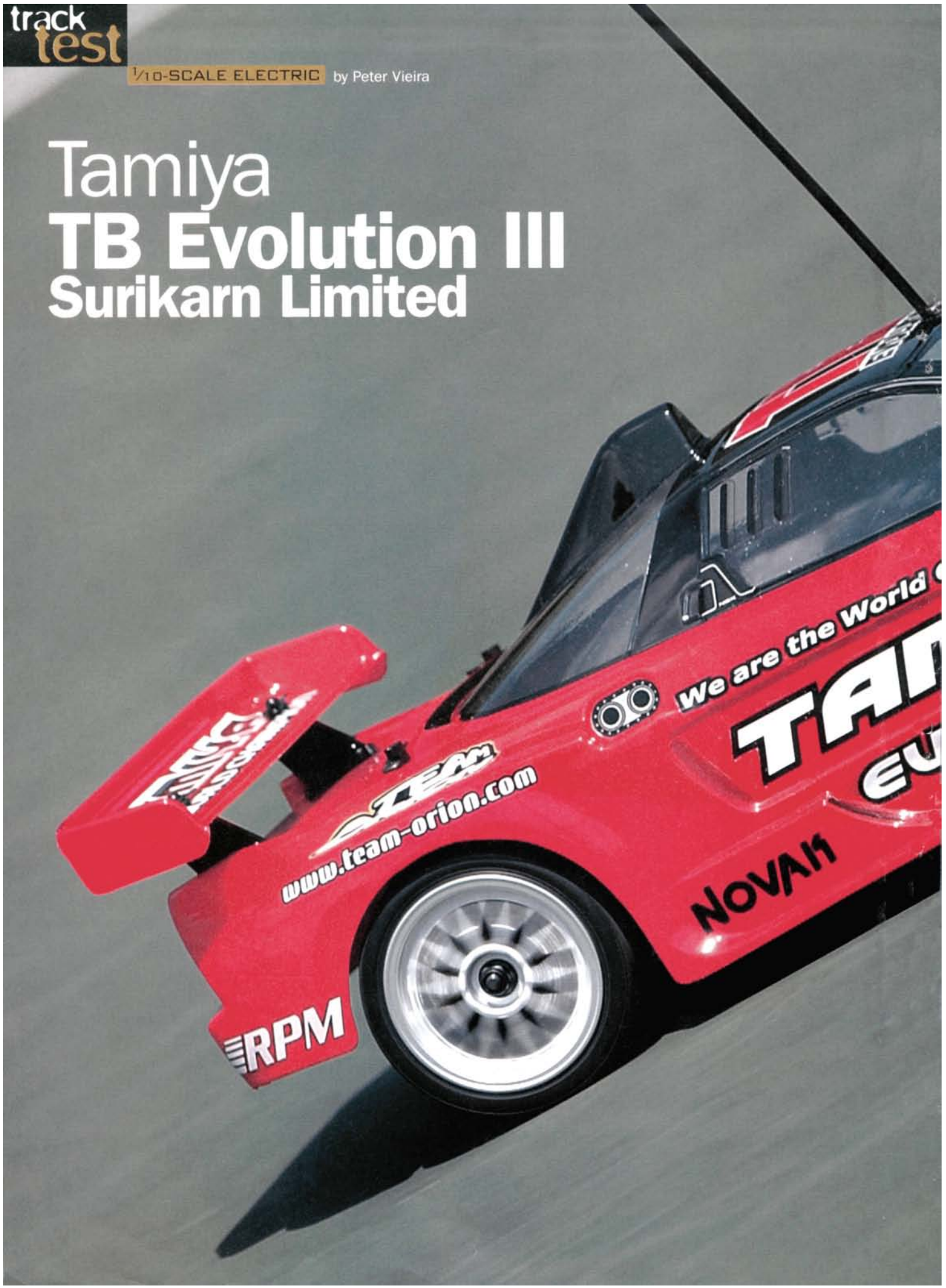
O.S. ENGINES distributed by Great Planes Model Distributors; osengines.com.

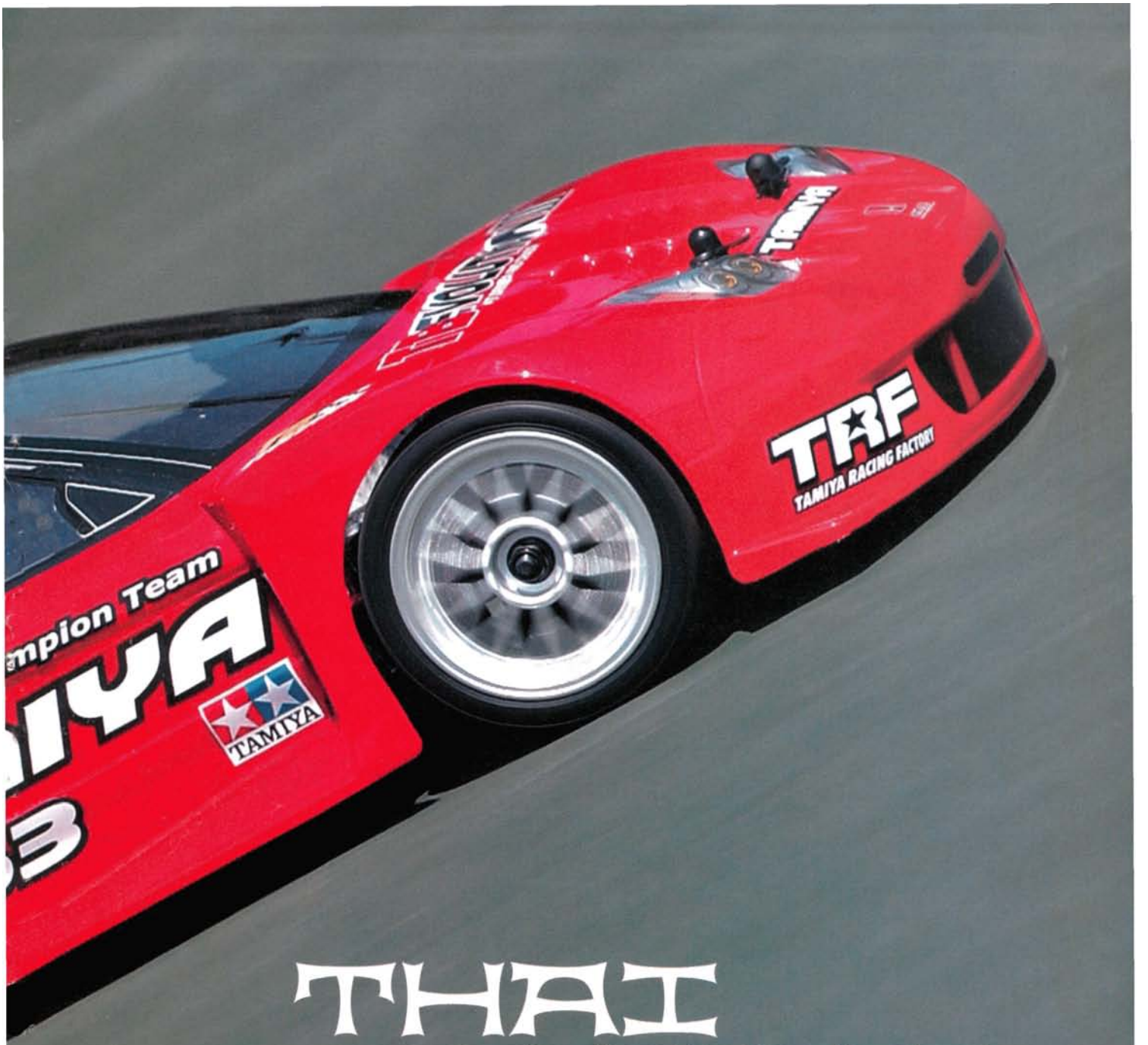
TEAM ORION INC. (714) 694-2812; team-orion.com.

click trip
RCCARACTION.COM
DOWNLOAD VIDEO OF THE RCX MAD FORCE IN ACTION!

1/10-SCALE ELECTRIC by Peter Vieira

Tamiya
TB Evolution III
Surikarn Limited





THAI FIGHTER

NO DRIVER IN RC HISTORY has gone from obscurity to world champion as quickly as Thailand's Surikarn Chaidajsuriya did with his victory at the 2002 IFMAR World Cup. Surikarn wheeled Tamiya's dual-belt TRF 414M to earn that win, but he has since graduated to shaft drive with the TB Evolution III. The car has been a great success for Tamiya, with a win at the German Indoor Cup in the hands of Marc Rheinard and the Japanese Yama Yama Cup courtesy of Satoshi Maezumi. But it is Surikarn's most recent victory that has Tamiya revisiting the TB Evolution III. To commemorate Surikarn's stock and modified victories at the 2003 Thailand International Touring Car Championships, Tamiya has given him the honor of a signature car: the Surikarn Limited. The full-option ride is as showy as race-cars get, but it also reflects the personal performance mods that Surikarn made to get his Evo III into the winners' circle. It's the ultimate shaft-drive Tamiya touring car!

A GRAPHITE-PLATE CHASSIS IS HARDLY A SURPRISE ON A PRO-CALIBER KIT, BUT THE TB EVOLUTION III SURIKARN LIMITED BEEFS UP THE CHASSIS TO A FULL 3MM.

The rear end gets a ball diff with lightweight Delrin outdrives and aluminum drive shafts. Note the vertical inboard camber-link position. To adjust roll center, just stack washers under the rod end.

SPECIFICATIONS

MANUFACTURER Tamiya
MODEL TB Evolution III Surikarn Limited
SCALE 1/10
PRICE $450
(Varies with dealer)

DIMENSIONS
Wheelbase 10 to 10.4 in. (255 to 265mm)
Width 7.3 to 7.4 in. (186 to 189mm)

WEIGHT
Total, as tested 52 oz. (1,498g)

CHASSIS
Type Double-deck plate
Material 3mm graphite main chassis, 2.5mm upper plate

DRIVE TRAIN
Type 4WD shaft
Primary 34T pinion/96T spur gear
Transmission ratio 2.6:1
Final drive ratio 7.34:1
Drive shafts CV-type (F/R) steel/aluminum
Differentials (F/R) one-way unit/ball differential
Bearing type Rubber-sealed ball bearings

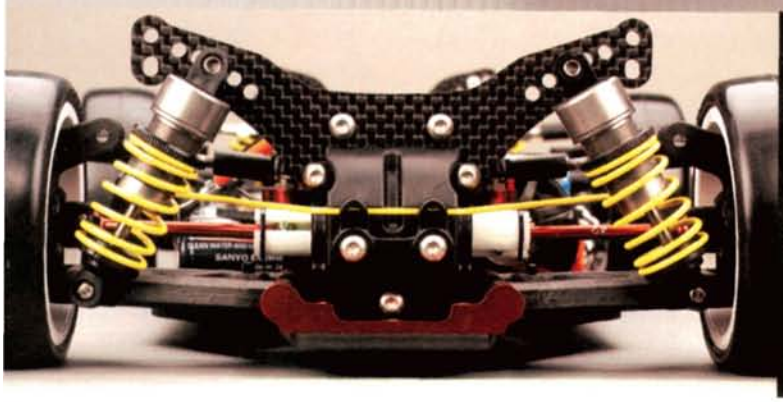
SUSPENSION
Type Lower H-arm with turnbuckle upper link
Shocks Aluminum threaded-body, fluorine coated

WHEELS
Type Tamiya dish, zero offset

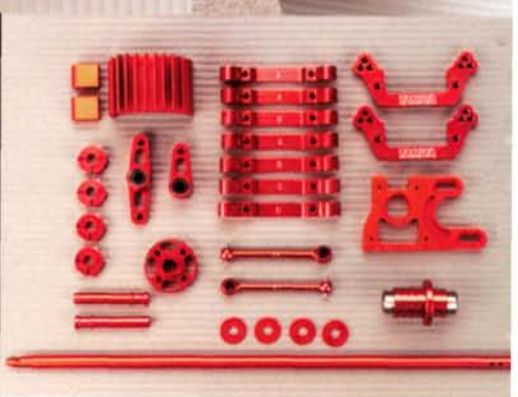
TIRES
Type Sorex 36R with urethane insert

Right: clamping aluminum hex-hubs and Tamiya's best fluorine-coated shocks are standard. Those turnbuckles are titanium, as are all the screws.

Below: Tamiya tweaked the shock-tower geometry to suit Surikarn's setup. Note how the chassis hangs well below the plane formed by the inboard hinge pins.



Right: look at all that red stuff! A complete set of *hinge-pin* toe brackets is included, along with a *clip-on* motor heat sink.



KIT FEATURES

CHASSIS. A graphite-plate chassis is hardly a surprise on a pro-caliber kit, but the TB Evolution III Surikarn Limited (or Evo SL, for short) beefs up the chassis to a full 3mm; the standard Evo III and most other tourers with plate chassis use 2.5mm stock. Six battery slots are milled into the chassis and a graphite strap is supplied to hold the cells, but it's set up for a stick pack (as required by the racing regs of Japan's sanctioning body), so the strap sits too high to hold individual cells. It's easy to mod the parts for a "side-by-side" pack—check out the "Building & Setup Tips."

The chassis' upper deck is 2.5mm graphite and sandwiches the front and rear gearboxes as well as the steering-bellcrank pivots and a machined-aluminum motor plate. Rest assured, it's a stiff setup. And here's the really cool part: titanium screws are used throughout. Very nice.

The front one-way uses a graphite plate to squeeze the ring gear against its aluminum hub. When the bearings grab, the gear won't deflect.

DRIVE TRAIN. Shaft drive is the hallmark of Tamiya's TB series, and the Evo SL has the most refined and heavy-duty system yet. The center shaft is solid aluminum, and it spins a rear ball differential and a front one-way unit. The one-way bearings are pressed into an aluminum hub assembly that the plastic ring gear is bolted onto. To prevent the ring gear from flexing when the one-way bearings dig in, it's backed by a graphite plate. The spur gear gets the same treatment, and it's braced by a graphite plate that squeezes it against an aluminum spur-gear hub. The rear ball differential breaks the "heavy-duty" theme and goes for weight savings instead with Delrin outdrives. Snap-on reinforcement rings prevent the outdrives from spreading under load, and the diff rings are keyed so they won't slip on the slick Delrin.

CV-style drive shafts are used front and rear, but they aren't identical. The front shafts are hardened steel to resist twisting when the one-way bearings grab, and the rears are lightweight aluminum and anodized red to match the Evo SL's other crimson components. Aluminum clamping drive hexes cap the axles, and rubber-sealed bearings support all of the rotating parts.

SUSPENSION AND STEERING. The Evo SL uses the same molded-graphite-composite arms as the standard Evo III, but it combines them with titanium turnbuckles instead of steel parts. The arms' hinge pins are held by machined-aluminum brackets, and four brackets are included so you can set the rear toe-in to zero, 2.5, 3, or 3.5 degrees. Precision aluminum spacers on the hinge pins allow up to 12mm of wheelbase adjustment, and the arms use droop screws to set down-travel. Front and rear swaybars are also standard. The manual calls for yellow "medium" bars as the starting setup, and "soft" (red) and "hard" (blue) swaybars are also included.

New aluminum bulkheads that wrap around the front and rear gearboxes are unique to the Evo SL. The bulkheads are threaded to hold the inboard ball studs vertical, and that makes it easy to make roll-center adjustments by stacking spacers under the studs.

The shocks are the centerpiece of any suspension system, and the Evo SL gets Tamiya's best. The aluminum shock bodies are threaded for precise preload adjustment, and the pistons, seal spacers and shaft guides are made of fluorinated plastic to reduce friction. The shock bodies and shafts also get a slippery fluorine coating that gives the shocks exceptionally slick action. The fluid included to fill the shocks isn't quite as special: it's Tamiya's usual, yellow, "soft" fluid. Graphite shock towers are standard (just as they are on the standard Evo III), but the SL's towers have new shock locations placed to Surikarn's specifications.

Last stop, steering. More top-quality stuff here: machined-aluminum bellcranks swing a graphite drag link and titanium turnbuckle tie rods. Even the servo-to-bellcrank link is a titanium turnbuckle—first class all the way.

BODY, WHEELS AND TIRES. To match Surikarn's Thailand championship setup, Tamiya specs Sorex 36R tires with shaped urethane inserts. The tires are mounted on Tamiya zero-offset dish wheels for you (but not glued), and precision aluminum spacers fit between the wheels and drive hexes to fine-tune the Evo SL's width. Unsurprisingly, a body isn't included with the Evo SL. I mounted a Tamiya Raybrig NSX shell for the photos, but I tested the car with Protoform's new Alfa Romeo 2.0 body.

BUILDING & SETUP TIPS

Tamiya manuals are always excellent, but the Evo SL's isn't quite as good as usual: it doesn't tell you which parts bags contain the items used in each step! Instead, you must flip to the back of the manual, where each bag's parts are inventoried and drawn to scale. Find the drawing of the part you need, and you'll find out which bag it's in. Keep an eye out for these steps as you build:

STEP 2. The instructions call for a 3mm drill bit to be used to relieve the arms' droop-screw holes. You can substitute an 1/8-inch drill bit if you don't have the correct metric bit.

STEP 5. Note the orientation of the bellcranks before you assemble them; the left bellcrank looks symmetrical, but it isn't. The short arm must be attached to the drag link.

STEP 10. Press the bearings onto the bevel pinions, and then install the assembly in the gearboxes. It's difficult to press the pinions into the bearings if you've put the bearings into the gearboxes first.

STEP 11. Don't go crazy searching for a bearing to press into the A8 bulkhead; the instructions don't call for one.

STEP 14. The manual notes that you may have to file the rear suspension arms for hub-carrier clearance. You absolutely will have to do this! I found it easier to remove material from the hub carrier with a grinding wheel, rather than hand-filing the inner surface of the suspension arm.

STEP 20. If you're setting up the Evo SL for side-by-side packs, Tamiya suggests that you not install the stick-pack battery tray parts in this step, presumably so you can tape the cells in. Instead, shorten the J2 brackets by 5mm each, and install as shown in the manual. Flip part J3 as suggested in the manual, but do not install part J1. Now you can use the graphite battery strap to keep the pack in, rather than old-school tape.

YOU'LL NEED

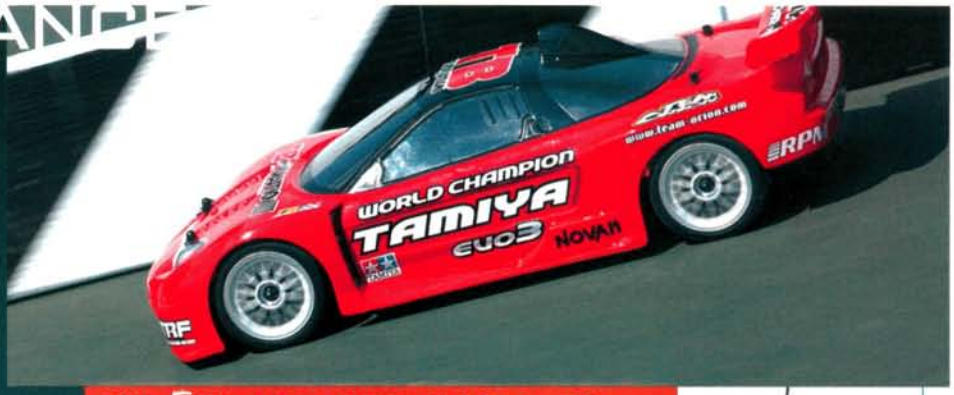
- Transmitter & receiver
- Steering servo
- Electronic speed control
- Battery
- Charger
- Tire glue
- Body

THE COMPETITION

	CHASSIS	DRIVE TRAIN	FRONT-DIFF TYPE	DRIVE AXLES	SHOCKS	BEARINGS	PRICE**	REVIEWED
Associated Factory Team TC3	Plastic semi-tub	Shaft	Ball	MIP CVDs	Threaded aluminum	Rubber-sealed	$300	12/01
Tamiya TB Evo III Surikarn Limited	**Graphite plate**	**Shaft**	**One-way**	**CV-type**	**Threaded aluminum**	**Rubber-sealed**	**$420**	**10/03**
Team Losi Triple-XS Graphite Plus	Graphite plastic semi-tub	Single belt	Ball	MIP CVDs	Threaded aluminum	Metal-shielded	$280	6/03
XRAY EVO2	Graphite plate	Double-belt	Ball	CV-type	Threaded plastic	Metal-shielded	$340	11/02
Yokomo SD SSG Special	Graphite plate	Shaft	Ball	CV-type	Threaded aluminum	Metal-shielded	$330	9/03

*Partial list; category is too large to list all competitive vehicles. **Price varies with dealer.

PERFORMANCE



I made a road trip to Radical Rick's Race City in Swansea, MA, to give the Evo SL its shakedown run. The shop's brand-new carpet track was the ideal test venue, thanks to a challenging layout and brightly lit, clean pits—RC heaven. Since the Evo SL's included Sorex tires are for pavement use, I swapped them for a set of TRC foams. Otherwise, I ran the car set up according to the manual.

From the first squeeze of the trigger, I could tell the SL was going to tear up the carpet (metaphorically, of course). It did exactly that, with only a whir from the drive train as the Core mod motor blasted the Evo SL down the straightaway like a laser-guided missile. The car tracked dead straight, with no sidestep at the start line. Bearing down on the binders for the first turn was less confidence-inspiring (remember, a car with a front one-way only has rear brakes). I didn't remember, so when I grabbed a big handful of brake, I looped the SL into the boards. It sounded nasty, but nothing broke and the chassis didn't feel tweaked, so I headed back onto the carpet.

THE CORE MOD MOTOR BLASTED THE EVO SL DOWN THE STRAIGHTAWAY LIKE A LASER-GUIDED MISSILE.

LIKES

- All of Tamiya's best stuff, all in one box.
- Easily and completely adjustable chassis and suspension.
- Super-smooth shocks
- Gorgeous car; just look at it.

Built according to the manual, the Evo SL is set up for asphalt, and the high-traction carpet caused more body roll than I would like, despite the front and rear swaybars. Nonetheless, the SL hugged the track through the corners and burned off very little speed in the process, thanks to the one-way setup. On corner exits, the front wheels dug in and pulled the car out of the turns with superior squirt; if you can set up a pass, the Evo will make it stick. After a few steering dual-rate and drag-brake tweaks at the transmitter, I was feeling very comfortable with it. I don't usually do well with one-way setups, but the Evo SL was very easy to drive. Although I track-tested the Evo on carpet, I also took a spin on Radical Rick's parking lot. The Evo's pavement setting is just about dead-on, with lots of steering and a precise feel at any speed—**all the way up to 40mph and then some!**

DISLIKES

- Most expensive car in its class.
- Low-rent shock fluid.

THE VERDICT

It's difficult not to like any car that has as many factory options and anodized bits as the TB Evolution III Surikarn Limited, but after you've unloaded more than $400 to park one on your workbench, it needs to do more than just look good. Not surprisingly, the Evo SL is exactly the high-performance car it should be, given its price, specs and Surikarn cred. While undoubtedly an object of lust for all Tamiyaphiles and any cool-car fan, the Evo SL is, first and foremost, a very fine racecar that deserves a look from any competition-minded driver simply because it can win races. If you have what it takes to win, so does the Surikarn Limited.

RATING THE TAMIYA TB EVOLUTION III SURIKARN LIMITED

	POOR / FAIR / GOOD / VERY GOOD / EXCELLENT
INSTRUCTIONS	The Evo's manual is still quite good, but the lack of parts-bag info with each step required more page flipping than usual.
PARTS FIT AND FINISH	I'd give it a 10 if only the rear hub carriers fit properly. Otherwise, every part of the Evo SL is flawless.
CORNERING ABILITY	If you aren't used to driving with a front one-way, you may find it prone to oversteering.
ACCELERATION	The slick shaft drive gets every oz.-in. of torque into the wheels, and the Evo SL launches straight every time.
DURABILITY	So far, so good. Nothing appears to be wearing prematurely, and the car has shrugged off the usual racing hits.

RADAR TESTED TOP SPEED 40.2 MPH* **BEST BUYER** Experienced racers, Tamiya collectors, anyone with a thing for "ultimate" cars.

* *Top speed varies with equipment used.*

TEST GEAR

KO Propo
EX-II transmitter
The EX-II isn't KO's top-of-the-line radio, but it's all any racer really needs. It has all the tuning options real racers actually use (such as independent steering and throttle endpoints, a 3-model memory, steering dual rate, and assignable grip buttons) as well as exponential and an ABS braking mode. Most important, all the features are easy to access and program.

Additional items used to complete the Surikarn Limited:

Novak GT7 speed control

Novak XXL receiver

Futaba S9001 steering servo

Protoform Alfa Romeo 2.0 body (for testing)

Tamiya Raybrig NSX body (for photos)

Team Orion 10x2 CORE modified motor

Team Orion V-Max RDS Sanyo 3300 cells

SOURCES

FUTABA distributed exclusively by Great Planes Model Distributors Co. (217) 398-6300; (800) 682-8948; futaba-rc.com.

KO PROPO USA INC. (310) 532-9355; kopropo.com.

NOVAK ELECTRONICS INC. (949) 833-8873; teamnovak.com.

PROTOFORM INC. distributed by Pro-Line (909) 849-9781; pro-lineracing.com.

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

TEAM ORION INC. (714) 694-2812; team-orion.com.

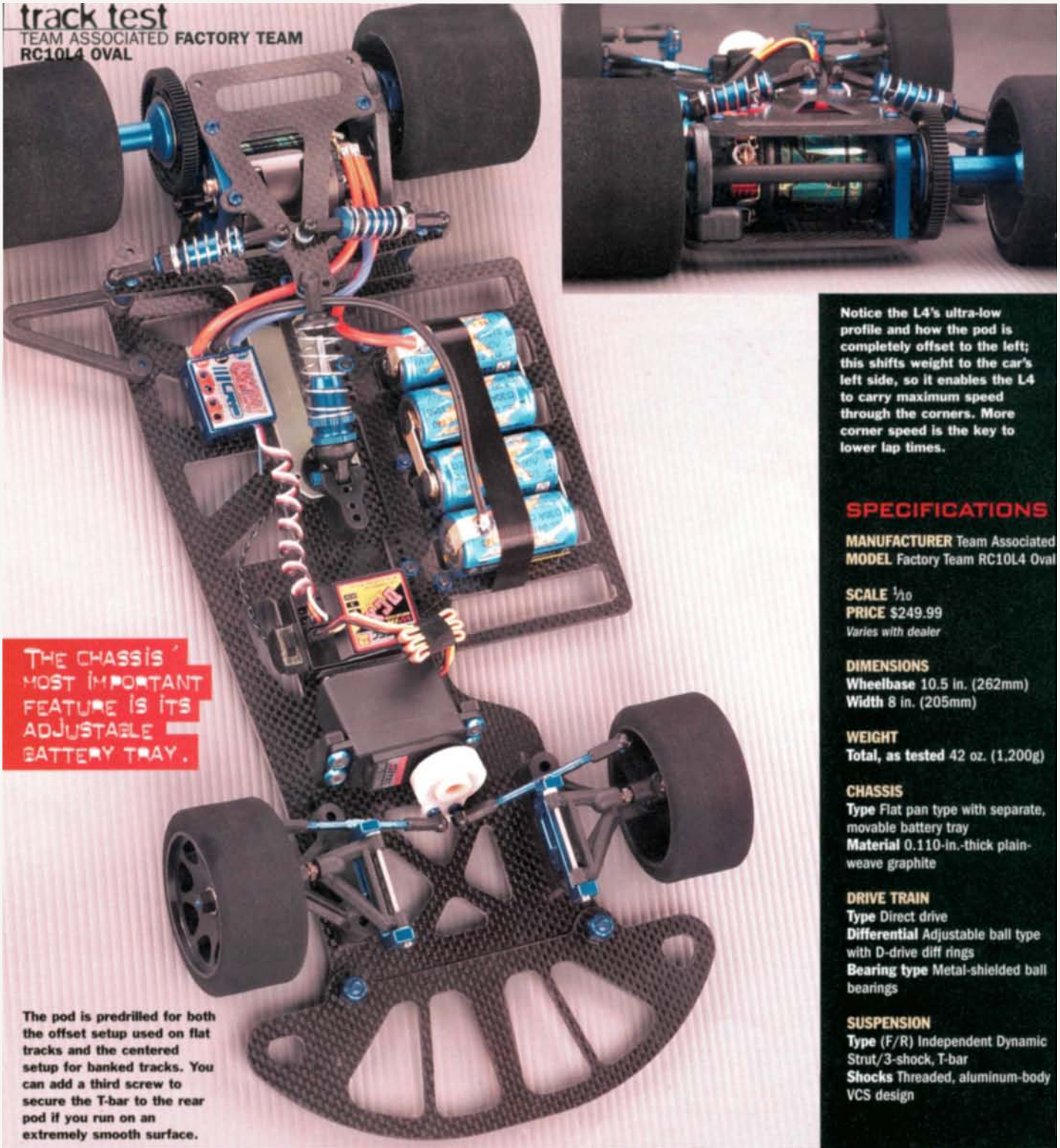
track test

1/10-SCALE ELECTRIC by Jim Roper

Team Associated Factory Team RC10L4 Oval

ALL-OUT OVAL

THE NEW B4 STEALTH BUGGY isn't Associated's only fourth-generation car release for 2003. In addition to dirt dominance, the A-Team is eyeing a new oval assault with its RC10L4 Oval—L40, for short. The Associated crew went right to "Factory Team" status with the new left turner, so there's no need to wait around for the fully loaded kit to come out; this car has the goods. You'll see an abundance of Team Associated's Factory Team parts, and you won't have to look too hard to spot the bounty that Irrgang Racing Service (IRS) tosses into the mix. Up front, the bright blue adjustable upper arm mounts should catch your eye; in the back, the long, machined, blue aluminum hub glimmers, and there's more. While there's a lot to please the eye, this kit is about more than eye candy. Let's get past the pretty stuff and see what the L40 has to offer.



THE CHASSIS' MOST IMPORTANT FEATURE IS ITS ADJUSTABLE BATTERY TRAY.

The pod is predrilled for both the offset setup used on flat tracks and the centered setup for banked tracks. You can add a third screw to secure the T-bar to the rear pod if you run on an extremely smooth surface.

Notice the L4's ultra-low profile and how the pod is completely offset to the left; this shifts weight to the car's left side, so it enables the L4 to carry maximum speed through the corners. More corner speed is the key to lower lap times.

SPECIFICATIONS

MANUFACTURER Team Associated
MODEL Factory Team RC10L4 Oval

SCALE 1/10
PRICE $249.99
Varies with dealer

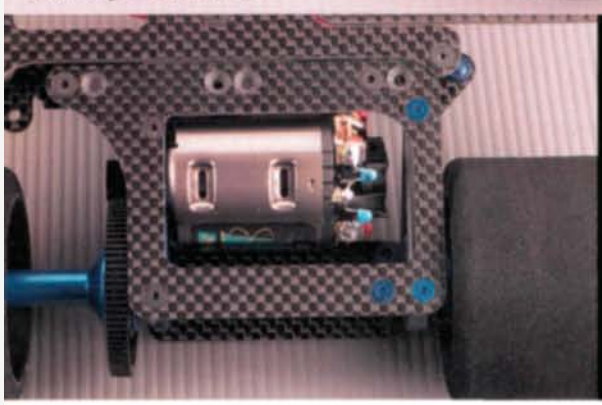
DIMENSIONS
Wheelbase 10.5 in. (262mm)
Width 8 in. (205mm)

WEIGHT
Total, as tested 42 oz. (1,200g)

CHASSIS
Type Flat pan type with separate, movable battery tray
Material 0.110-in.-thick plain-weave graphite

DRIVE TRAIN
Type Direct drive
Differential Adjustable ball type with D-drive diff rings
Bearing type Metal-shielded ball bearings

SUSPENSION
Type (F/R) Independent Dynamic Strut/3-shock, T-bar
Shocks Threaded, aluminum-body VCS design



Right: Associated hit a home run with the design of its Dynamic Strut front end. On the L4, the company makes it a grand slam by adding the IRS upper arm mounts. Note the inline axles that further enhance the car's ability to corner hard.

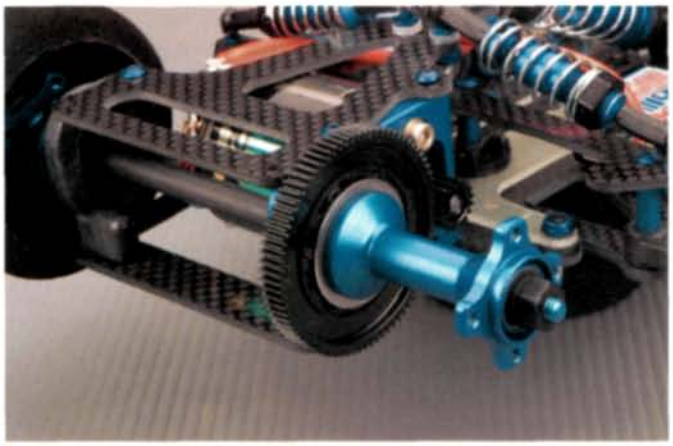
KIT FEATURES

CHASSIS. The strong, light main graphite chassis plate has countersunk screw holes and is drilled for the easy installation of a servo of "standard" size. Micro-servo fans will have to drill a hole to accommodate a micro-servo's smaller case. To ensure that the L40 can be adapted to tracks of all types and sizes, the chassis has been drilled for short- and long-wheelbase configurations. Some racers swear by the short-wheelbase setup, but most will stick with the recommended long ride because it's more stable. A graphite bumper that supports a very light foam bumper replaces the molded bumper that saw duty on quite a few Associated pan cars over the years.

The chassis' most important feature is its adjustable battery tray. Instead of slots in the main chassis, the L40 has a separate graphite tray that holds 6 cells. Seven mounting holes allow the tray to be moved 0.9 inch fore and aft in 0.15-inch increments to adjust the car's weight distribution. The pack can also be moved closer to or farther from the main chassis thanks to the battery slots' width of 2.29 inches.

All of the L4's nuts and many of its screws are made of blue-anodized aluminum for that Factory Team look, but for crash-resistance, all the high-stress fasteners are made of good ol' steel.

DRIVE TRAIN. Like all oval cars, the L40 is "direct drive": the motor's pinion gear meshes with a spur gear mounted on the axle. There is neither a transmission nor a gearbox. The L40's diff is built around the included 81-tooth, 48-pitch, Kimbrough spur gear whose diff balls are sandwiched between new, "D" drive diff rings. While each ring's outer circumference is round, the inner circumference is D-shaped; a matching D-shape has been machined in each hub to lock the rings in place. This eliminates the need to pin or glue them. IRS produces the good-looking, blue-anodized hubs, and the left hub is of the preferred double-clamping type. The IRS guys also supplied their Graphite Pro axle. The diff is very easy to adjust with the included wrench that fits over a large plastic nut threaded onto the end of the axle. Just slip the wrench over the nut in the right-hand wheel, and turn it to tighten or loosen the diff. This car is all about going fast, so it rolls on ball bearings; even the spur gear has bearings.



IRS aluminum parts are featured in the rear of the car, too. You can't tell here, but the mating parts are keyed to fit together in a way that eliminates the need for pinning or gluing the diff rings into place (details in article).

SUSPENSION AND STEERING. Associated's Dynamic Strut front end has been well proven on the L Series cars and on oval machines made by other manufacturers, but the L40 has a few extra features. Aluminum upper arm mounts from IRS are the most significant of these. Each is machined of flex-resistant 6061 T-6 aluminum and has six holes for the upper arm hinge pin. This gives you a wide variety of roll-center options, especially because you can use holes in different positions on the left and right arms; as an oval car, the L40 will only need to turn left, and the IRS mounts help tailor its handling to do just that. Blue-anodized inline axles and titanium turnbuckles are the other Factory Team additions to the Dynamic Strut setup. The inline axles provide a more aggressive steering setup than the now optional trailing steering blocks and axles. A Kimbrough servo-saver is the steering system's finishing touch.

The rear suspension is a T-bar/3-shock design. The shocks have threaded, blue-anodized aluminum bodies and use Associated's Volume Compensating System (VCS): a piece of foam absorbs the oil displaced by the shock shaft as it enters the shock body. A bottle of 30WT shock fluid is supplied, and all three shocks have silver springs: the center spring is rated at 3.85 pounds, and the side springs are 8-pounders. Associated offers springs with other rates to fine-tune the rear end.

The T-bar is a 0.075-inch symmetrical fiberglass plate that's held on the chassis by a pair of captured pivot balls. A graphite brace lends extra support to the pivot-ball screws, and the motor pod is attached to the T-bar with two screws. If you run on a smooth track that offers a lot of traction, you can install a third screw to stiffen the T-bar. The motor pod features upper and lower graphite plates and a blue-anodized motor plate. The Associated guys know that most oval racing is on flat tracks, so the L40's pod is fully offset to the left to handle that type of track.

BODY, WHEELS AND TIRES. Associated leaves the choice of body and tires to you. Most oval kits don't include a body, and leaving the tires out is a good thing, as tire choice varies so much with driver and track; we don't want to pay for tires we might never use. Body posts are included, but they're much too tall. Of course, they are easy to shorten, but you'll have to drill your own body-clip holes, since each post has only one hole in its tip (which you'll lop off).

BUILDING & SETUP TIPS

GRAPHITE PREP. Sand the edges of the chassis, the battery tray and the pod plates with 400-grit sandpaper and seal the edges with CA. This will prevent the layers from delaminating because of crashes or wear. Apply the CA using a cotton swab; if wisps of cotton stick to the chassis, they'll be easy to sand off.

BEVEL THE BATTERY SLOTS. File down the sharp edges of the battery-tray slots. This will let the cells sit as low as they can go and will prevent the slots' edges from cutting the strapping tape that secures the cells.

POLISH THE PIVOT BALLS AND KINGPINS. It takes only a few minutes, and polishing these parts will allow your L40 to perform at its best. Pour a little metal polish onto a rag, and then use a rotary tool to spin the parts in the polish.

CENTERED REAR POD OPTION. If you run on a banked track, you can use the optional mounting holes for the shocks and T-bar to center the pod. You'll also need a short right hub and wide axle spacer; the manual has all the details. For races on banked tracks, it's a good idea to move the battery pack closer to the car's centerline.

YOU'LL NEED

- Body
- Tires
- Transmitter and receiver
- Steering servo
- Electronic speed control
- Motor
- Pinion gear
- 4- or 6-cell battery pack
- Charger

FACTORY OPTIONS

- 4-cell tray—item no. 8491
- Complete on-road and oval spring set—1583
- Front springs 0.018/0.022/0.024 in.—8427/8431/8433
- Macro shock springs: 3.20 lb. (black)/3.50 lb. (green)/4.20 lb. (blue)—8232/6494/6497
- Wide rear axle spacer—8468
- Right D-drive diff hub of standard length—8500
- Trailing-type stub axle—3213
- Offset steering block—8421
- Magnesium motor plate—4538
- Composite plastic left motor pod bulkhead—4541

PERFORMANCE

To get a good handle on this oval contender, I tested it on a flat track and on a short, banked track—both carpet tracks on which I practiced and raced the car. I certainly put the L40 through its paces. I kept all the stock springs, but I did run a different setup at each track: the standard 2 degrees of negative camber on the right front wheel and zero camber on the left front. The tires wore evenly on both tracks, so I didn't alter camber. For caster, I used 2 degrees on the right front and zero on the left; like my camber setting, it's a pretty typical setup. I'll rarely deviate from that caster combo, but I will try other combos such as 4 degrees on both sides. Two degrees on the left and 4 degrees on the right might be good, too.

THE L40 WAS EASY TO POSITION ON THE INSIDE OF THE TURNS.

The banked track was only 115 feet long. I decided to keep the offset-pod setup because the track was nearly flat and the straights were banked at the same degree as the corners (about 5 degrees). Needless to say, full fields on a short track led to some pretty rough running. The racing was so rough that in one heat, my test car was actually slammed hard enough to be sent up and off the track to crash out of sight. Much to my surprise, it came away unscathed from what was easily one of the worst crashes I've ever had. I really thought something would be broken. After three rounds of rough qualifying, I made the A-main. When it wasn't being bashed around, the L40 was able to run with every other car in its class.

On the flat track, I again made it to the A-main. Throughout the day, I was able to dial the car in to suit the track, and it reacted as expected to all the changes I made. With my tire setup, the L40 never showed any signs of having push, and it was always easy to position on the inside of the turns. It ran smoothly regardless of how hard I pushed it; it didn't hook, push, or traction-roll. But don't think that the L40 feels "numb" when you drive it; it's a sensitive car with lots of steering.

LIKES

- Lots of included hop-ups, including IRS axle and upper arm mounts.
- Highly adjustable chassis.
- Fast and easy to work on.

DISLIKES

- Body posts must be custom-drilled.

THE VERDICT

Associated aimed to offer the best possible oval package. The car comes with all the goods and offers more adjustments than any other Associated oval car.

For about $250, you get a lot of car. You won't have to think about which hop-ups you need; this car already has them. If you bought an older L3 kit and all the parts to bring it up to this kit's level, you'd spend $150 more than the cost of the L40! This money would be better spent on an oval racer's best friends: batteries. Bottom line: this is a serious competition kit and can win at any track.

RATING THE TEAM ASSOCIATED FACTORY TEAM RC10L4 OVAL

	POOR / FAIR / GOOD / VERY GOOD / EXCELLENT
INSTRUCTIONS	Associated's instructions are among the best in the business, and the L40's manual has a handy tuning section.
PARTS FIT & FINISH	All the L40's parts are of high quality and go together well.
ACCELERATION	Like all oval cars with steamroller tires and direct drive, the L40 is a missile off the line.
CORNERING	With its inline axles and the IRS upper-arm mounts, the L40 has tons of steering.
DURABILITY	This car was brutally tested, but nothing broke. It's tough!

ESTIMATED TOP SPEED 25MPH* **BEST BUYER** all oval racers

**Top speed will vary with equipment used.*

TEST GEAR

Hitec DCX receiver
The Hitec DCX receiver is appropriately known as "the glitch buster." This signal grabber has dual conversion, which means that the incoming message goes through two filters, so the receiver has twice as much glitch-fighting capability as its competition.

Additional items used to complete the Associated Factory Team L40

Reedy Krypton modified motor

Reedy X-Cell 3300 4-cell pack

LRP Quantum Competition ESC

Hitec HS-325HB steering servo

TRC Foam tires

Protoform Dodge Intrepid SS body

SOURCES

HITEC RCD INC. (858) 748-6948; hitecrcd.com.

LRP distributed exclusively by Associated Electronics (714) 850-9342; teamassociated.com.

PROTOFORM INC. distributed by Pro-Line (909) 849-9781; pro-lineracing.com.

REEDY a division of Team Associated.

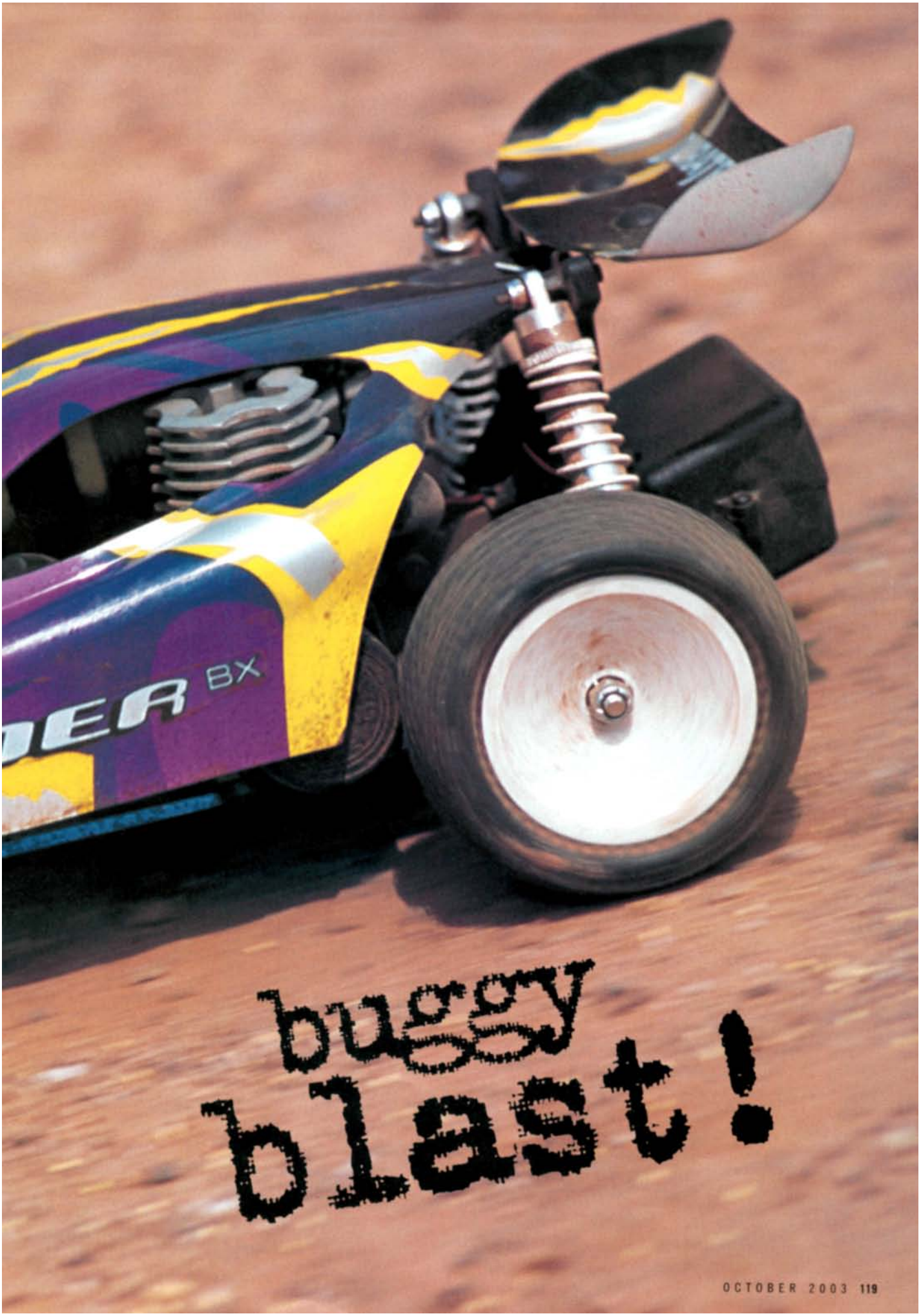
TEAM ASSOCIATED (714) 850-9342; teamassociated.com.

TRC distributed by Trinity Products (732) 635-1600; teamtrinity.com.

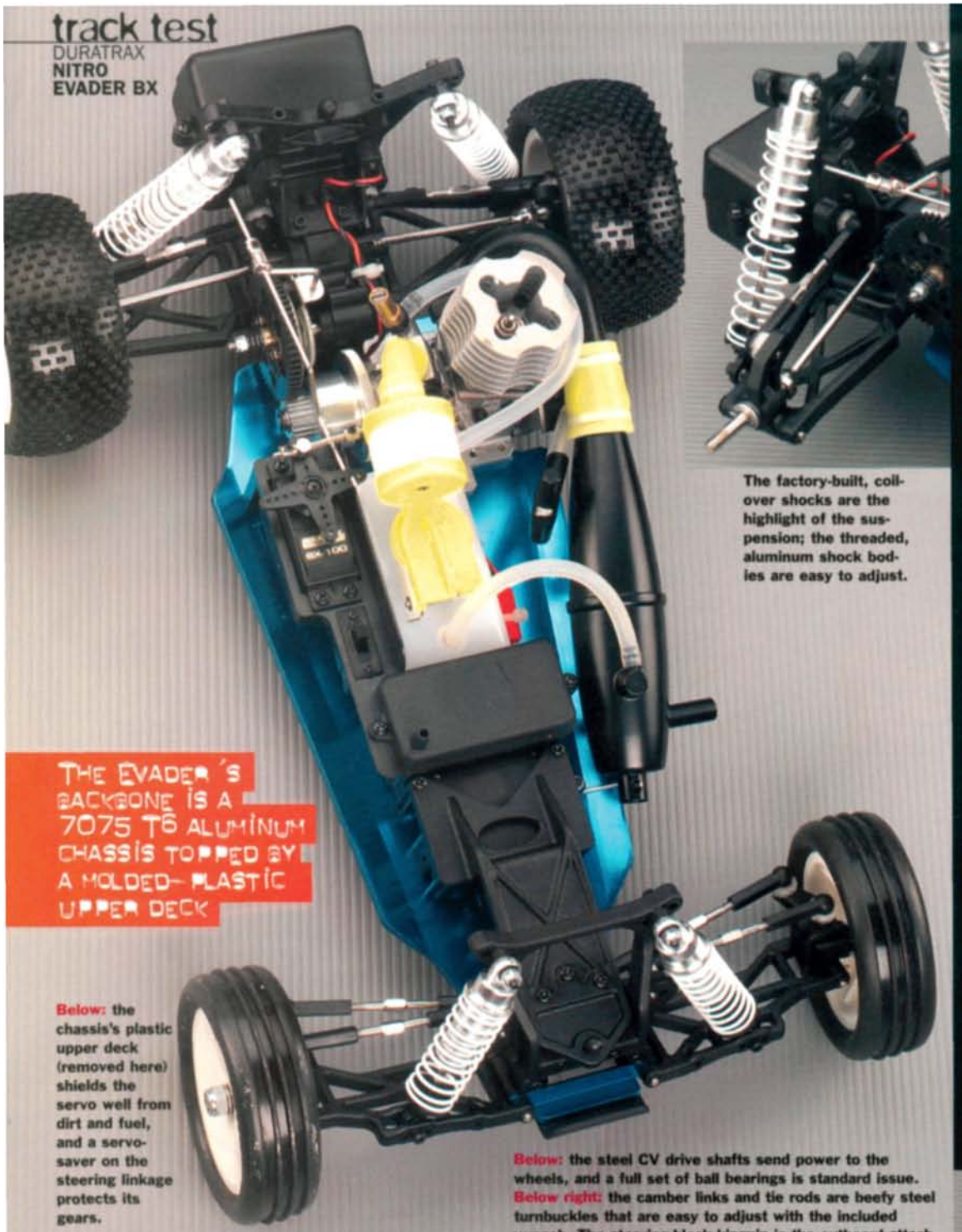
1/10-SCALE NITRO by Matt Boyd

DuraTrax Nitro Evader BX

IN THE JULY ISSUE, WE INTRODUCED YOU TO DURATRAX'S NITRO EVADER ST. We praised its brawny DTX .18 engine, its impressive list of standard features and its all-in-one-package convenience. The Nitro Evader BX you see on these pages also sports these virtues, but it hides them under an athletic buggy body instead of a truck shell. Philosophically, the BX follows its truck sibling: combine the hardware that experienced drivers respect with a factory-built package that's complete with the support equipment that will get beginners onto the track *now*. Toss in a handful of perks such as an instructional video, a fuel bottle, a glow igniter and a one-year warranty against breakage on most of the key parts, and you have a recipe for a first-rate ready-to-run.



buggy blast!



THE EVADER'S BACKBONE IS A 7075 T6 ALUMINUM CHASSIS TOPPED BY A MOLDED-PLASTIC UPPER DECK

The factory-built, coil-over shocks are the highlight of the suspension; the threaded, aluminum shock bodies are easy to adjust.

SPECIFICATIONS

MANUFACTURER: DuraTrax
MODEL: Nitro Evader BX
DISTRIBUTOR: Great Planes

SCALE: 1/10
PRICE: $250
Varies with dealer

DIMENSIONS
Wheelbase 11 in. (280mm)
Width 10.25 in. (260mm)

WEIGHT
Total, as tested 3.8 lb. (1,745g)

CHASSIS
Type 3mm plate with rolled edges and a plastic upper deck
Materials Blue-anodized 7075 T6 aluminum and molded plastic

DRIVE TRAIN
Type 3-gear enclosed gearbox
Primary 17T clutch bell/56T spur gear
Primary ratio 3.29
Transmission ratio 2.89
Final drive ratio 9.52:1
Drive shafts Steel CV axles
Differentials Adjustable ball type with steel outdrives
Slipper clutch Hard-anodized disc type
Bearing type Metal-shielded ball bearings

SUSPENSION (F/R)
Type Lower A-arm with adjustable steel upper camber link
Shocks Threaded, aluminum-body, coil-over, oil-filed, adjustable

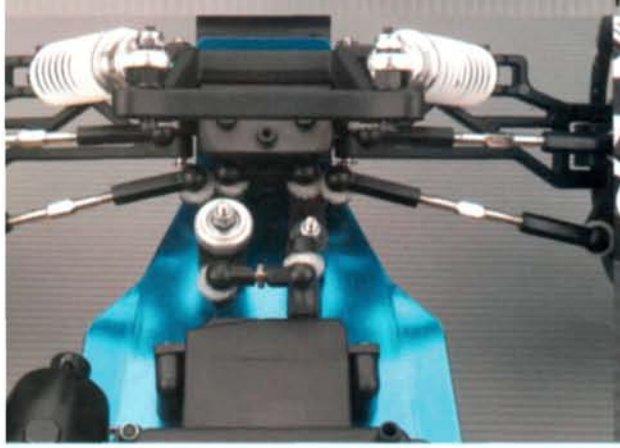
WHEELS
Type 2.2-in., one-piece plastic dish

TIRES
Type (F/R) Pro-Line ribbed fronts/Bow Tie rears

ENGINE & ACCESSORIES
Type DTX .18 side exhaust with pull-starter (manufactured by O.S.)
Carburetor Dual-needle rotary w/throttle-return spring
Manifold/Tuned pipe Dual-chamber, black-anodized aluminum
Fuel tank 75cc

Below: the chassis's plastic upper deck (removed here) shields the servo well from dirt and fuel, and a servo-saver on the steering linkage protects its gears.

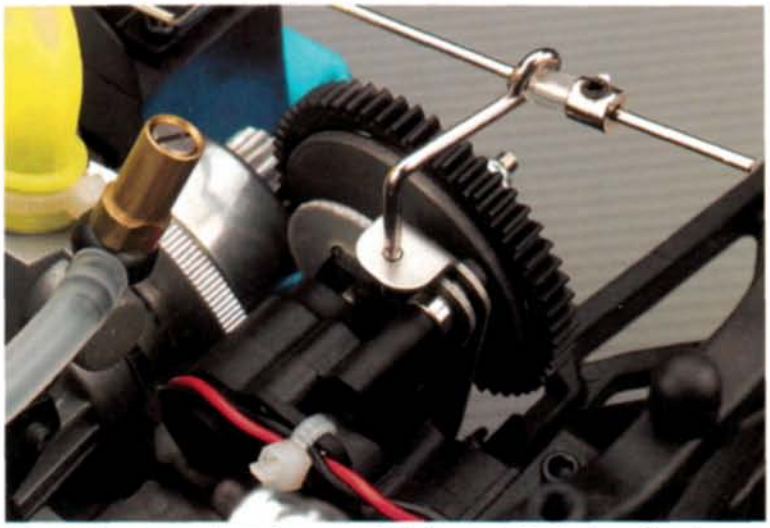
Below: the steel CV drive shafts send power to the wheels, and a full set of ball bearings is standard issue.
Below right: the camber links and tie rods are beefy steel turnbuckles that are easy to adjust with the included wrench. The steering-block kingpin is the outboard attachment for the camber link; it's simple and effective.



KIT FEATURES

CHASSIS. The Evader's backbone is a blue-anodized 7075 T6 aluminum chassis that's topped by a molded-plastic upper deck. The aluminum lower deck is compact, and DuraTrax makes the most of the available space by mounting all the hardware and radio gear in the middle of the chassis; this minimizes weight transfer during cornering. The edges of the chassis plate are rolled up to add rigidity. The upper deck makes the chassis a box structure, further enhancing the handling while helping to shield the radio gear from fuel and dirt. About the only knock against the Evader chassis is the location of the battery box: it hangs off the back of the chassis aft of the rear-suspension bulkhead. This leaves it fairly exposed and prone to being damaged by impacts with hard objects. Luckily, it is one of the items covered by DuraTrax's Stress-Tech warranty, so if it takes one hit too many, it won't cost you a thing to get it replaced.

DRIVE TRAIN. DuraTrax didn't skimp here. Power is put to the ground through a sealed, 3-gear box that's bracketed by a hard-anodized slipper clutch and an adjustable ball differential. The clutch really helps improve the life of your gears and makes the Evader more stable coming out of corners by controlling wheelspin. The ball diff operates without the backlash of a gear unit and improves cornering. The diff's outdrives are steel, as are the CV-style drive shafts—another testament to DuraTrax's commitment to durability. The hardware is just as good on the brake side: a stamped-steel caliper squeezes a fiberglass brake disc. A full set of 16 ball bearings rounds out the hardware.



When you have to put the binders on, you'll be happy the Evader has a fiberglass brake rotor that's squeezed by a steel caliper.

ENGINE AND ACCESSORIES. Now we're talking! The Evader comes with some serious firepower, especially for an RTR. O.S. manufacturers the DTX .18 engine, and it cranks out major muscle at any rpm. It has a 2-needle rotary carb for maximum tunability. The carb is also equipped with a throttle-return spring—a safety feature that is both simple and important; why they aren't standard equipment on every nitro vehicle is one of the universe's great mysteries. An oversize aluminum engine mount anchors the entire assembly to the chassis.

At 75cc, the fuel tank offers decent run times, and it is isolated from chassis vibration by four, rubber O-rings. The exhaust manifold routes the spent gases directly over the pull-starter instead of around it—presumably to keep the package narrow and toward the center of the chassis. It works, but it also means that an unwary grab at the pull-starter handle can result in sizzled fingers (take my word for it; I speak from experience!).

SUSPENSION AND STEERING. Just about every part of the Evader's suspension is covered by DuraTrax's Stress-Tech guarantee. The parts look so beefy that I doubt you'll need to use that warranty, but it's sure nice to know it's there, especially when your Evader sails off a jump and 10 feet into the air. As for the setup itself, molded lower A-arms are anchored to the chassis with steel hinge pins at all four corners, and brawny steel turnbuckles are used on all four corners. The highlights of the suspension setup are the aluminum shocks; they feature dual seals and are threaded for easy preload adjustment. The dual-bellcrank steering system is also turnbuckle-equipped and incorporates an adjustable servo-saver.

BODY, WHEELS AND TIRES. The body shell, wheels and tires make the biggest difference between the Evader stadium truck and the buggy version. I prefer the BX buggy's body profile. The body is prepainted and decaled like the other vehicles in the Evader line, and the Pro-Line tires (4-rib fronts, Bow Tie rears) are glued to 2.2-inch dish rims. The body itself has a nice, taut, sculpted look, and the driver's-side window opening manages to get enough cooling air to the head without requiring hideous gaping holes in the pretty purple body. As everyone knows, purple is the fastest color, and the Evader looks even faster with a little dirt on its flanks.

My only complaint about the Evader's exterior concerns the rear wing. It looks good enough until it flies off the first time you hit a bump. The manual suggests that you bend the mounting wire, but that didn't do the trick for me. Good thing the Evader also looks good without a wing!

ELECTRONICS & ACCESSORIES

INCLUDED

DURATRAX 2-CHANNEL PISTOL-GRIP RADIO. The Evader's Futaba-built transmitter is a 2-channel, 75MHz AM unit and includes all the features needed for a nitro car: servo-reversing, steering and throttle trims and adjustable steering rate (dual rate) as well as the usual battery warning light and a charging jack in case you decide to upgrade to rechargeables.

DURATRAX SX100 SERVOS. The included servos are each good for about 40 oz.-in. of torque and provide crisp steering and throttle response.

GLOW STARTER & FUEL BOTTLE. First-time nitro runners aren't likely to have a fully stocked pit box, so DuraTrax throws in a fuel-filler bottle and a glow starter. The plastic-body glow igniter has a locking tip, and the bottle's 250cc capacity is enough for three tankfuls plus a little to spare.

YOU'LL NEED

- Fuel

BATTERIES. DuraTrax saves you a battery-buying trip by including all the alkaline cells you need—12 "AA"s for the radio gear and 1 "C" cell for the glow igniter.

VIDEO. The video will really help first-timers out with setup and maintenance (and though they won't admit it, the tape has a few tips that experienced users could stand to be reminded about). The video covers such basics as fuel, needle settings and starting and break-in procedures, and it even includes the engine sounds you need to know to diagnose "lean" and "rich" running and a "good" engine.

PERFORMANCE

THE DTX .18 ENGINE WAS A REAL PUSSYCAT—EASY TO START, HOT OR COLD

Break-in for the big DTX .18 is pretty standard. The instructions tell you to do it on a flat surface, but if you do it on asphalt, you'll burn the Pro-Lines right off the rims, so you might want to look for a tame dirt lot for your first few runs. With a few tanks on it, the engine was a real pussycat—easy to start, hot or cold. The manual says you won't need to prime a hot engine unless you've run it dry, but I had to do so a couple of times. Luckily, the fuel bottle's rubber cap fits the tuned-pipe exhaust outlet perfectly, so this made a perfect tool for priming the engine without singeing my fingertips! (It's also handy for plugging the exhaust for the trip home when the bottle is empty.) I didn't mess with the factory-recommended needle-setting values, and I left the clutch as it came adjusted from the factory. I could probably have squeezed out a little more power by leaning it down, but the big .18 already thumps out more than the Evader can put down anyway. The slipper clutch seemed just about right, though I expect that as it wears in, it might need tweaking. The .18 has plenty of power to push the relatively light Evader along. We clocked it at 34.9mph running slightly rich on a hot day. Speed will vary with running conditions.

I did most of my testing on a fairly loose surface that was just slightly damp after a rain sprinkle. I didn't plan it that way, but it was nearly ideal for the Evader. Those skinny front tires let the front slide a little when turning in, but the DTX .18's plentiful torque means power oversteer is a just a trigger pull away. With the steering sensitivity dialed down a little, it takes only a minute or two to figure out how to balance the Evader on the throttle and keep it neutral in the turns (hooray for smooth throttle response!). There may be a faster way to drive through corners, but if you're like me, the temptation to drift sideways through turns with big dirt rooster-tails flying will be too much to resist.

Over smaller bumps, the Evader is quite composed; the back end dances just enough to make things interesting, but the car never feels out of control. On bigger obstacles that bottom out the chassis, the Evader gets a little more unpredictable, but it's no worse than any other vehicle with similar ground clearance, and even if it gets a little out of shape, its balance makes it pretty easy to catch. As far as I'm concerned, a good brake system is an inconspicuous one, and that's just how I'd describe the Evader's. If you really jam the binders while cranking the wheel, you can get the car to pitch a little sideways, but otherwise, it just stops without drama. I saw absolutely no sign of fade or wear, but I don't use the brakes any more than I have to.

Jumps are great, but pick a relatively smooth launching surface. The torque effect of the big engine and brakes makes it easy to adjust when it's airborne, but if you let it fly on its own, it consistently lands slightly nose-down. Be warned: it can and will bottom out on big jumps. I accidentally barrel-rolled it when I launched it off a 3-foot sand berm and popped one of the tie-rod ball links loose when the left front dug in on landing; there wasn't any damage, and next time, when I hit the same jump squarely, the Evader flew just right.

LIKES

- Big-time power available at any rpm.
- Easy to master handling.
- Tons of topnotch hardware
- You break something and DuraTrax replaces it—free!

DISLIKES

- Rear wing likes to make an early exit.

THE VERDICT

No car can ever be all things to all people, but DuraTrax takes a pretty respectable stab at it with the Nitro Evader BX. It comes with everything you need (except fuel) in one box, so it's an ideal choice for first-time nitro drivers. But it isn't just for rookies; it packs a host of high-performance goodies that are usually reserved for more upscale cars. Buyers of all experience levels will appreciate the solid value offered by the high content, low price and comprehensive warranty. The BX's lower stance and narrower tires make its driving characteristics more finesse-oriented than those of the Evader ST, but it is still very easy to get comfortable with. For sheer, sport-running fun, the Evader rules!

RATING THE DURATRAX NITRO EVADER BX

	POOR / FAIR / GOOD / VERY GOOD / EXCELLENT
INSTRUCTIONS	The manual and included video gives beginners the next best thing to a hands-on experience.
INCLUDED ELECTRONICS	The Futaba-made radio gear is high-quality, reliable and even has dual-rate steering.
PARTS FIT AND FINISH	All the major pieces fit well and move freely, but the body shell and rear wing could sit more securely.
ACCELERATION	The Evader has more power than it can use; the only limiting factor is traction.
CORNERING ABILITY	Balance is excellent, but the narrow tires and firm compound give up a little in ultimate grip.
BUMP & JUMP HANDLING	Composure over small bumps and jumps is great, but the lack of ground clearance can bite you on jump landings.
DURABILITY	I gave my Evader a thorough thrashing, and nothing broke.

ESTIMATED TOP SPEED 34.9MPH* **BEST BUYER** anyone in the market for a high-value, high-content, 2WD RTR nitro buggy

* Top speed varies with fuel used.

SOURCES

DURATRAX distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; duratrax.com.

TEST GEAR

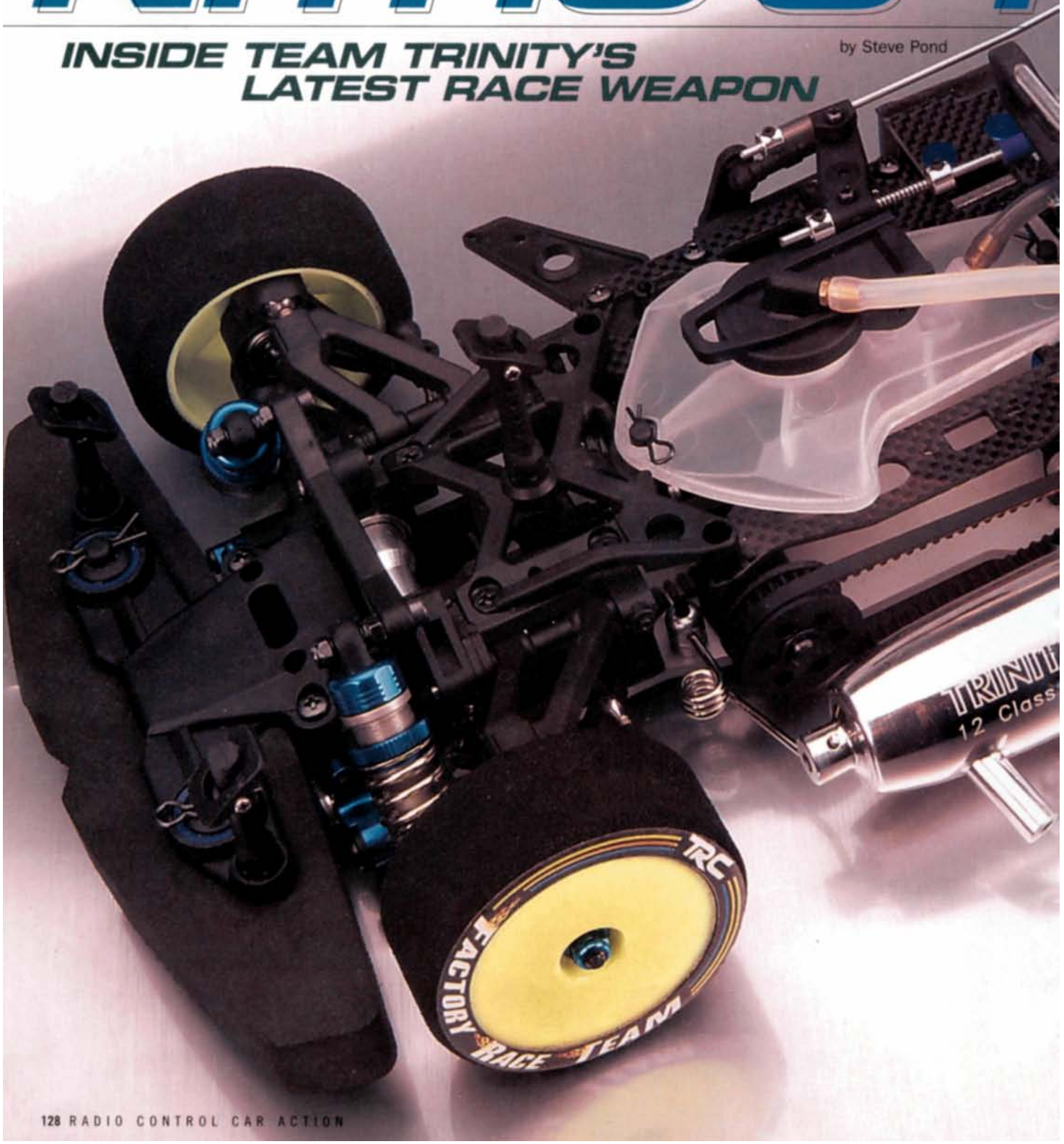
DuraTrax Red Alert 20% Racing Fuel

DuraTrax claims to have just the right mix of castor and synthetic oils to maintain optimum lubrication, cooling and power. Red Alert comes in 10- and 20-percent-nitro mixes; of course, I opted for the more potent brew for the Evader! In the DTX .18 it made hellacious power, even with a moderately rich needle setting, and it ran reliably all day.

TRINITY TEAM MAGIC NITRO G4

INSIDE TEAM TRINITY'S LATEST RACE WEAPON

by Steve Pond



SPECIFICATIONS

MANUFACTURER
Team Magic

MODEL
Nitro G4

DISTRIBUTOR
Team Trinity

DIMENSIONS
Wheelbase* 10.2 in. (259mm)
Width* 7.87 in. (200mm)
*Adjustable

PROTOTYPE WEIGHT (w/body)
59.9 oz. (1,698g)

CHASSIS
(upper/lower plates) 2mm graphite (Pro), 2mm aluminum (Racer)/3mm stamped-aluminum lower plate (both versions)

DRIVE TRAIN
4WD triple-belt with 2-speed transmission, Primary 20/24Tclutch-bell gears; 51/47T spur gears

DRIVE TRAIN
Ratio 2.526:1

FINAL DRIVE RATIOS
6.442:1 (1st gear), 4.947:1 (2nd gear)

CLUTCH
30mm Centax-type (Pro), 30mm 3-shoe centrifugal (Racer)

BRAKE
Vented, punched-steel disc with fiber pads

AXLES
CV-type

DIFFERENTIALS
(F/R) one-way/sealed bevel-gear (Pro), sealed bevel-gear (Racer)

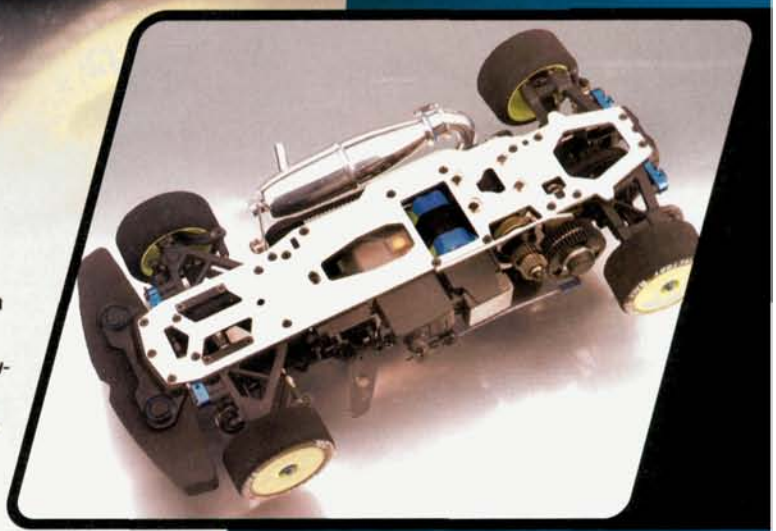
BEARINGS
Metal-shielded

SUSPENSION (F/R)
Pivot ball/pivot ball with adjustable turnbuckle upper link

SHOCKS
Threaded, hard-anodized aluminum

The Nitro G4 is the latest nitro touring car from Team Magic, and it incorporates many design innovations developed over a year of testing by Trinity's team drivers, most notably Joel Johnson and Josh Cyrul. According to Team Trinity, the G4's design emphasizes a lower center of gravity (CG) to improve handling, but that apparently wasn't the only item on the agenda for this new machine. The G4 also incorporates a number of other features and innovations that improve performance and make maintenance easier.

The G4 is available in two versions—Racer and Pro—both of which should be capable performers on the track, but there are subtle differences between their standard equipment that make one version better for a certain type of racing than the other. The less expensive Racer includes gear differentials at both ends and an aluminum upper deck. The Racer's gear differentials and standard clutch are more appropriate for dusty, dirty parking-lot running, while the more refined Pro model is better for racing on prepared tracks.



The view from below reveals a few more cutouts in the chassis plate than you'll find on an average nitro touring car. The brake assembly, engine, flywheel, receiver battery pack and differentials all sit lower than they do in most cars. A rechargeable receiver battery pack made of specialized AAA size Ni-MH cells is required. Mounting the receiver pack with the 3 cells facing down would further lower the center of gravity.

The G4's 2-speed transmission uses finer pitch 0.8 module gears instead of the more common 1.0 module gears. The finer-pitch gears more closely resemble 32-pitch gearing; they allow finer gear-ratio changes and run more smoothly than the coarse-pitch gears. The receiver is mounted vertically in this prototype, but you could mount a small receiver flat on the receiver mount to lower the car's center of gravity.

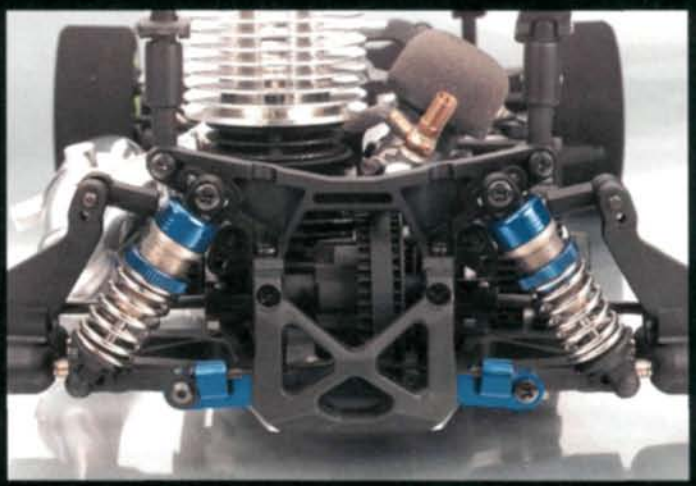
The fuel tank is easily removed for routine maintenance or replacement. The tank's unusual shape above the deck keeps the weight of the fuel as low down as it can be.

RACER STANDARD FEATURES

- Hard-coated, threaded-aluminum shock bodies
- Lightweight, clutch-type, 2-speed transmission
- Vented brake disc with brake cam bearings
- Low-drag drive belts
- Lightweight pivot balls and 2-speed shaft
- Full ball bearings
- 3mm aluminum lower chassis plate
- 2mm aluminum radio plate
- Low-CG, front and rear gear differentials
- 5th body posts
- Low-CG fuel tank
- 30mm, 3-shoe clutch
- Price: $299

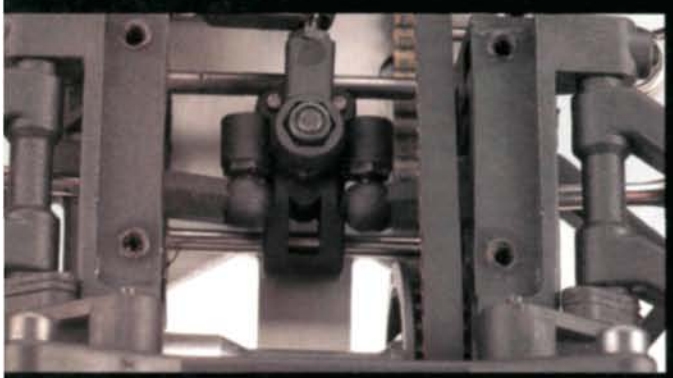
ADDITIONAL PRO MODEL FEATURES

- Woven-graphite radio plate
- One-way, front differential
- 30mm Centax clutch
- Front and rear adjustable blade-type swaybars with aluminum mounts
- Price: $449



Threaded-aluminum shocks damp a versatile pivot-ball rear suspension. The adjustable, blade-type anti-roll bar with blue aluminum mounts at the rear of the car is more easily set for tweak and stiffness than a standard swaybar.

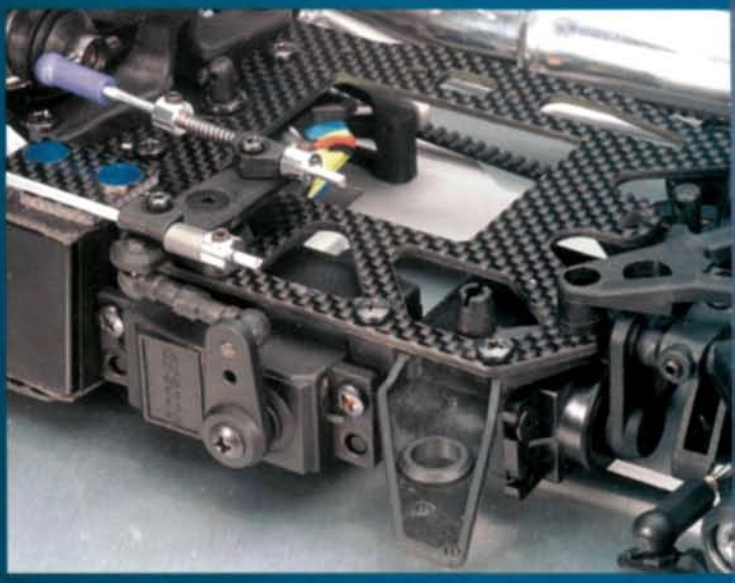
TEAM MAGIC



Team Magic designed a unique rack-type steering assembly that isn't easily fouled by debris, and has more consistent Ackerman geometry throughout its travel range. The rack assembly also has a built-in, adjustable servo-saver.

The front suspension's typical pivot-ball setup allows quick adjustment of width, camber and caster without replacing a single part. Held in place with body clips and two pins, the foam front bumper can be quickly and easily removed and replaced to facilitate maintenance.

The differentials of belt-driven cars are notoriously difficult to remove for maintenance because of the drive system, but Team Magic reconfigured the G4 to require only the removal of six screws to completely remove the rear diff. This setup also limits the disruption of the suspension tweak. In some cars, half of the suspension must be removed to free the differential.



To improve handling, the latest nitro touring designs place the steering servo flat on the chassis for a lower CG. Taking this concept to the next level, the G4 is the first to have its throttle servo mounted flat to the chassis. It's hard to know whether this setup actually reduces CG enough to offer any advantage, but we've seen it on a few other cars since the G4's introduction. It appears to have some merit—or at least some marketing appeal.

Removing the front diff requires the removal of these U-shaped bearing holders. The bulkheads must then be detached from the chassis, and then the diff can be removed from the underside of the bulkheads. It isn't quite as easy as removing the rear differential, but it's still easier than in most cars.

The compact Centax-type clutch included with the Pro version measures only 30mm in diameter—about 5mm larger than a quarter. It allows the engine to sit lower in the chassis and it minimizes the power needed to allow the clutch and flywheel assembly to spool up. Threaded, 0.8 module clutch gears can be mixed and matched with a variety of spur gears for a wide range of ratios to suit many track sizes and conditions.

THE VERDICT

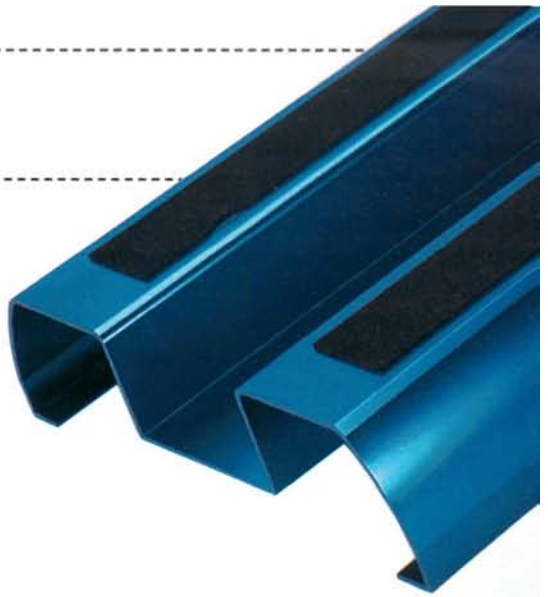
Our first look indicates that the G4 shows a lot of promise. Its overall construction is solid and features molded parts of stiff, but not too rigid, molded plastic. The rigid molded parts ensure crisp, consistent handling, but they don't seem to be so rigid that they'll break easily.

The new features keep the CG very low, and that should make this machine more sure-footed than most. Team drivers Josh Cyrul and Joel Johnson have already driven the car extensively, and they agree that it's much more planted out of the box, and it accelerates harder. It's just plain faster and better.

SOURCE GUIDE

TEAM MAGIC distributed exclusively by Trinity Products Inc. (732) 635-1600; teamtrinity.com.

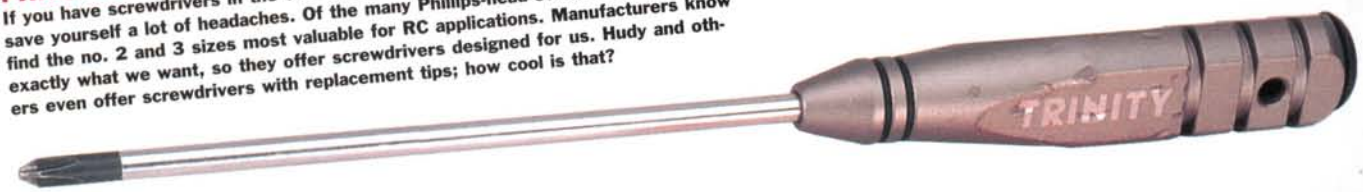
THE BASICS



THE NEXT TIME you're at a race, take a walk around the pits; odds are you'll notice that many toolboxes are overflowing with gizmos and gadgets; stuff accumulates—especially since most of us have to have every tool that hits the shelves. Many toolboxes contain every implement in every available shape and size. If you're new to RC and don't know where to start, I'll help you to figure out what you do and do not need. I'll start with the basics and move on to some special tools for your flavor of RC and tell you about a few hardware-store hookups. I'll even introduce you to some of those too-cool tools.

PHILLIPS-HEAD SCREWDRIVERS

If you have screwdrivers in the correct sizes made of high-quality materials, you'll save yourself a lot of headaches. Of the many Phillips-head screwdrivers, you'll find the no. 2 and 3 sizes most valuable for RC applications. Manufacturers know exactly what we want, so they offer screwdrivers designed for us. Hudy and others even offer screwdrivers with replacement tips; how cool is that?



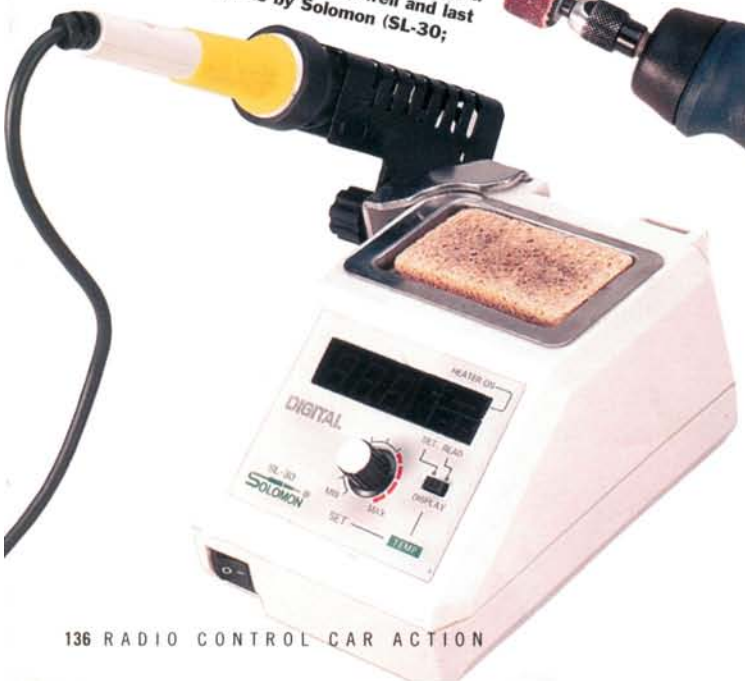
MUST-HAVE

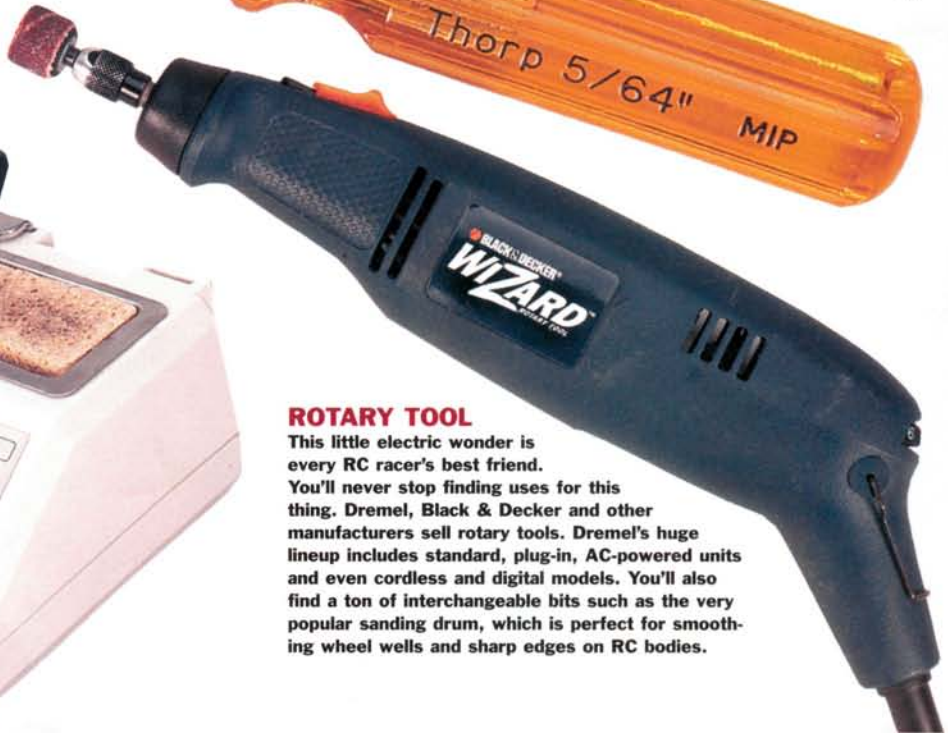
HEX DRIVERS

These should be your first accessory purchase. The L-wrenches included in just about every kit are notorious for damaging screw heads. High-quality hex drivers such as those offered by MIP/Thorp, Associated, Hudy, Trinity, Losi and others are worth their weight in gold.

SOLDERING IRON

That's soldering iron—not soldering gun. There is a difference. Soldering guns are too unwieldy for RC. A pencil-type iron rated at 40 watts or higher and with a chisel bit is the most useful. There are several available brands, and the Weller irons are popular among RC'ers for good reason: their products are well made, so they work exceptionally well and last a long time. This one is by Solomon (SL-30; $83).





ROTARY TOOL

This little electric wonder is every RC racer's best friend. You'll never stop finding uses for this thing. Dremel, Black & Decker and other manufacturers sell rotary tools. Dremel's huge lineup includes standard, plug-in, AC-powered units and even cordless and digital models. You'll also find a ton of interchangeable bits such as the very popular sanding drum, which is perfect for smoothing wheel wells and sharp edges on RC bodies.

CAR STAND
Sure, a block of wood will work as a car stand, but it's hack. DuraTrax, Trinity and OFNA (among others) offer purpose-built stands that have bonus features such as shock holders for those trackside suspension rebuilds. This aluminum stand is from Take-Off (T0008B; $15).

CAMBER GAUGE
It makes no sense to have an adjustable racing suspension if it's all out of whack. Camber gauges such as RPM's aren't expensive and will accurately measure camber—a vital aid to making tuning adjustments (70992; $9.95).

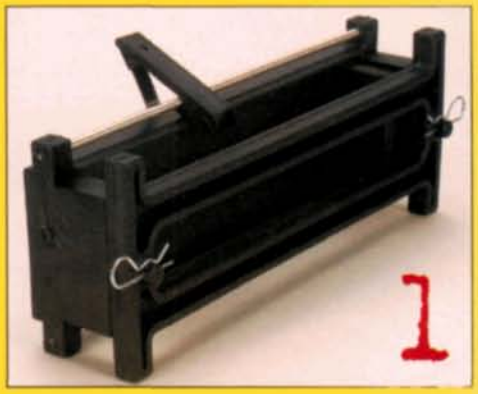
TOOLS

by Matt Higgins

FLUSH SIDE CUTTER
This will leave a nice, crisp and—you guessed it!—flush cut when you separate parts from their molding trees.

NEEDLE-NOSE PLIERS
You won't believe how many times you'll reach for these. Generally, the narrower the better because such pliers allow you to reach less accessible areas. Especially effective are needle-nose pliers that have a small built-in spring to open the jaws.

MUST-HAVE STUFF FOR ELECTRIC RC

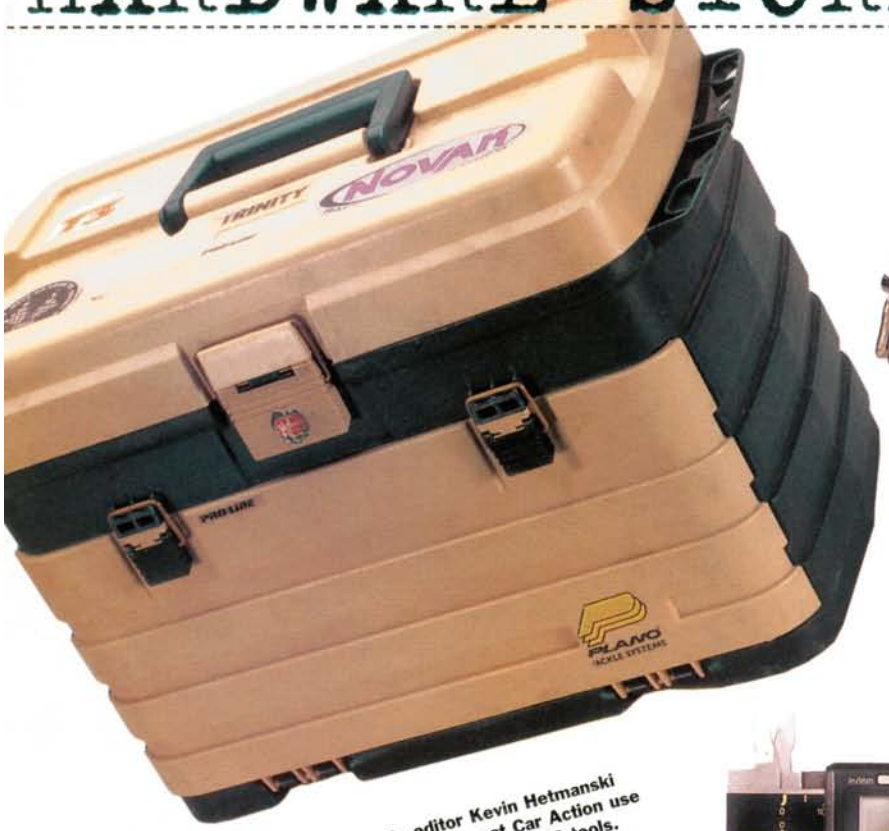


1. BATTERY JIG. W.S. Deans' Speed Jig is simply the jig to have. Others get the job done and are good if your budget is on the tight side, but the spring-loaded arm featured on the Deans model makes it stand out from the rest (2040; $14.95).

2. BRUSH CUTTER. If you like to tune and want to have every possible advantage, you'll certainly want Trinity's Brush Factory 2 (RC4115; $99.99). Like the previous version, it cuts, serrates and slots brushes, and it also allows you to modify P-94 brushes.

3. BRUSH-HOOD ALIGNMENT TOOL. Parma offers a gadget that will ensure that your motor hoods are aligned with each other (90114; $13.99).

HARDWARE-STORE FINDS

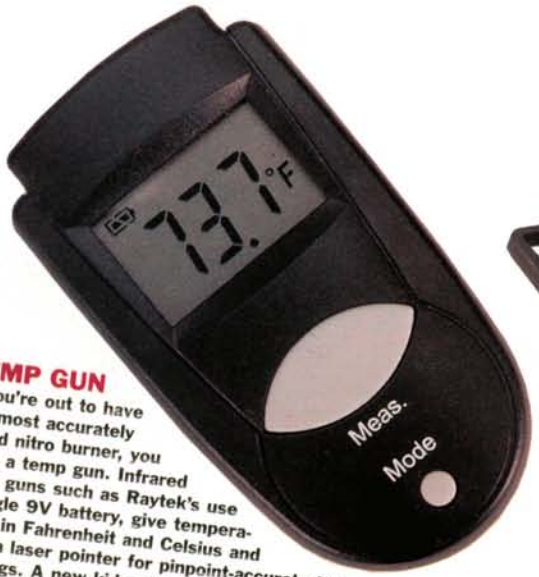


TOOLBOX
In addition to having associate editor Kevin Hetmanski as our main "toolbox," almost all of us at Car Action use a Plano tackle box of some sort to hold our RC tools. You'll notice that just about everyone at the track uses one of these, too. The large, four-drawer model works great to organize all your gear.

THIRD HAND
Unless you're a mutant, you probably don't have a third hand. RadioShack, for one, can hook you up with a handy (get it?) tool. Most have weighted bases and three movable arms with alligator clips at the end of each.

CALIPERS
You'll find these in every serious racer's toolbox. Slide, dial and digital calipers are readily available, and good digital calipers (the easiest to use) don't cost much anymore.

NITRO STUFF—JUST FOR NITRO NUTS



TEMP GUN
If you're out to have the most accurately tuned nitro burner, you need a temp gun. Infrared temp guns such as Raytek's use a single 9V battery, give temperatures in Fahrenheit and Celsius and have a laser pointer for pinpoint-accurate temp readings. A new kid on the block, Pro Exotics, offers a mini temp finder that fits in the palm of your hand and runs on an included 3V lithium cell and costs $35.

STARTER BOX
Pull-start engines are great in that you can start them without extra expense, but you can do better. If you need to replace your engine, choose a non-pull-start racing engine, and if you're simply sick of tugging on that starter cord, pick up a starter box that does all the work for you. DuraTrax, Dynamite, OFNA, Team Associated, Trinity and other manufacturers all offer starter boxes. This is Dynamite's Torque-Start (DYN5625; $90).

CRAFTSTMAN ACCU-CUT CUTTERS

Want to make quick work of trimming a body post or anything else? Buy one of these powerhouse cutters; it slices through body posts with ease and leaves a clean, professional cut.

HOBBY KNIFE

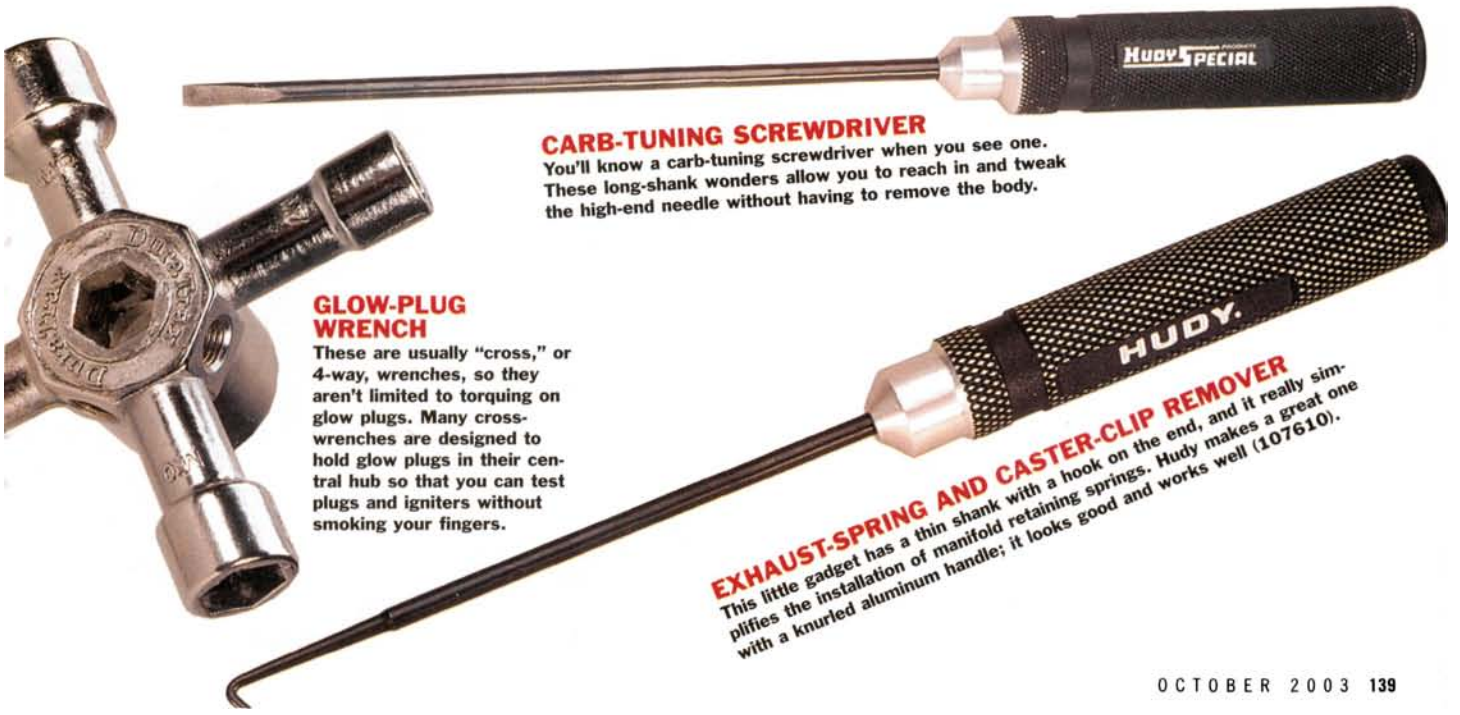
You'll need a hobby knife such as the venerable X-Acto with the often-used no. 11 blade.

ROBOGRIP PLIERS

Offered by Sears, these pliers automatically adjust themselves to the required width and are a big improvement on the standard locking pliers. They're perfect for gripping flywheels and opening stuck-fast cans of traction compound.

TAP

Sooner or later, you'll struggle to thread a screw into a part. If you use graphite composite parts, it will be sooner. Even if you don't end up with a sore arm, you might break a screw or a part or strip out a hole or ruin a screw head. To avoid all this, use a tap; in American-made kits, the 4-40 is the most common size.



CARB-TUNING SCREWDRIVER

You'll know a carb-tuning screwdriver when you see one. These long-shank wonders allow you to reach in and tweak the high-end needle without having to remove the body.

GLOW-PLUG WRENCH

These are usually "cross," or 4-way, wrenches, so they aren't limited to torquing on glow plugs. Many cross-wrenches are designed to hold glow plugs in their central hub so that you can test plugs and igniters without smoking your fingers.

EXHAUST-SPRING AND CASTER-CLIP REMOVER

This little gadget has a thin shank with a hook on the end, and it really simplifies the installation of manifold retaining springs. Hudy makes a great one with a knurled aluminum handle; it looks good and works well (107610).

TOO-COOL TOOLS

OK; so you might be able to live without these more expensive items, but they are on everyone's wish list. And once you have them, you'll never want to wrench without them.

TWEAK BOARDS AND SETUP BOARDS

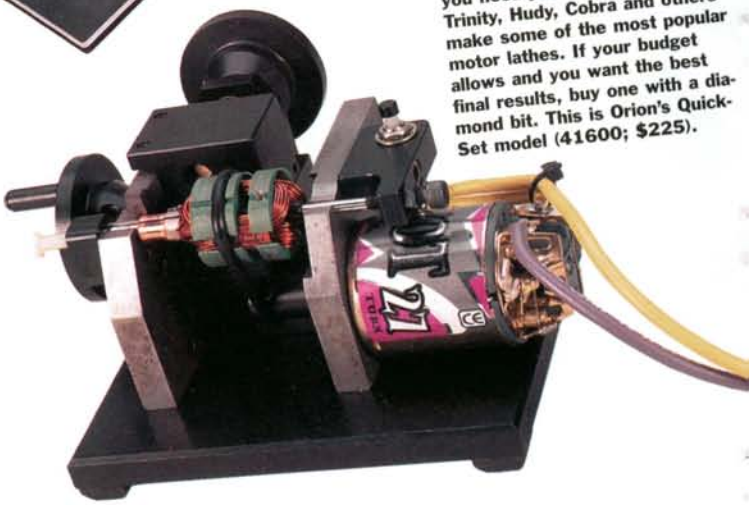
If your car is tweaked (improperly balanced), it will never run at its full potential; others are available, but MIP's Tweak Station paved the way and is just the tool you need to set up a tweak-free chassis (9020; $45). To further ensure a properly set up chassis, Team Matt Francis offers a highly precise setup board made of flat acrylic (TMF1002; $38.99). Companies such as Hudy sell setup boards for all types of vehicles, and one is sure to be just what you need to get dialed in like a pro.

TIRE BALANCER

With its ball-bearing design, the Team Matt Francis tire balancer ensures spot-on results, and its red-anodized aluminum looks trick (TMF1200; $49.99).

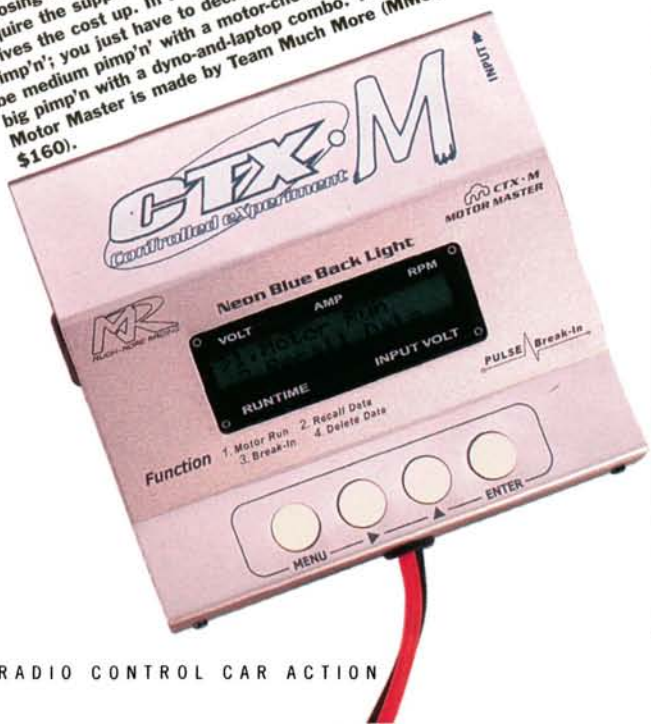
MOTOR LATHE

Whether you race mod or stock, a fresh comm makes the most power. Sure, you can have a fellow racer cut your comm for you or have the folks at the hobby shop do it, but if you want your motors to always be at their max, you need your own motor lathe. Trinity, Hudy, Cobra and others make some of the most popular motor lathes. If your budget allows and you want the best final results, buy one with a diamond bit. This is Orion's Quick-Set model (41600; $225).



MOTOR DYNO

A dyno (dynamometer) measures motor performance, but how it measures performance greatly influences its cost. A simple optical pick-up dyno uses a sensor to measure rpm; it's really just a motor-rpm checker and most don't cost too much more than $100; a load-imposing dyno can cost close to $500, and it might require the support of a laptop computer, which further drives the cost up. In RC, if you have a dyno, you're pimp'n'; you just have to decide whether you want to be medium pimp'n' with a motor-checker-type dyno or big pimp'n with a dyno-and-laptop combo. The CTX-M Motor Master is made by Team Much More (MM0001; $160).



YOU'VE HEARD THE SAYING: "Always have the right tool for the job." It's true. Rest assured, with all the right tools shown here, you'll need only to find the jobs. I suggest that you rebuild the transmission case that sounds as if it has 2 pounds of sand in it. Yeah; I'm talking to you.

SOURCE GUIDE

ASSOCIATED ELECTRONICS (714) 850-9342; rc10.com.
DURATRAX distributed by Great Planes Model Distributors; (217) 398-6300; (800) 682-8948; duratrax.com.
DYNAMITE (217) 355-9511; horizonhobby.com.
HUDY SPECIAL PRODUCTS (305) 639-9665; hudy.net.
LOSI (217) 355-9511; horizonhobby.com.
MIP (626) 339-9008; miponline.com
NIFTECH (440) 257-6018; niftech.com.
OFNA RACING (949) 586-2910; ofna.com.
PRO EXOTICS (303) 347-0500; tempgun.com.
PARMA/PSE (440) 237-8650;parmapse.com.
RAYTEK (800) 866-5478; raytek.com.
RPM R/C PRODUCTS (909) 393-0366; rpmrcproducts.com.
TEAM MATT FRANCIS distributed by Trinity Products.
TRINITY PRODUCTS (732) 635-1600; teamtrinity.com.
WELLER distributed by Cooperhand Tools (919) 362-1670; cooperhandtools.com.
W.S. DEANS (714) 828-6494; wsdeans.com.

RACER NEWS

BY THE RC CAR ACTION TEAM

TOYS for BOYS GOES ROAD RACING

Toys for Boys in Kennesaw, GA, (just outside Atlanta) recently opened one hell of an on-road track. The 140x70-foot track is paved with fine-grain asphalt for excellent traction, and it has a freshly painted curb. There are indoor pits with concession stands, and there's also an awesome off-road track. On-road races are held on Saturdays and off-road races are on Sundays. For more information, check out tfbraceway.com.

SITE SEEING

metricspecialties.com

This site is for anyone who has ventured into his local hardware store only to discover that its selection of metric screws sucks. On this site, you will find an assortment of button-head screws, flat-head screws, flange screws, setscrews and a variety of metric fasteners made of stainless steel, hardened steel and materials that ordinarily come only with kits. According to the site, you can even have screws made to order.

BOARD WALK

FROM THE RADIOCONTROLZONE .COM BULLETIN BOARD

280 degrees during break-in!

MARVELOUSMATT: My engine hit 280 degrees during the first tank while I was breaking it in. Are such high temps bad, considering it was hot and humid?
JOEMAXX: Try finishing the break-in when it is cooler outside.
COOLHEAD: High break-in temps are normal for the first few tanks. Tolerances are very tight and cause excess friction and, therefore, heat.

How do I build solid dirt jumps?

GUBBY: Every jump I've made deteriorates. How do you make good jumps?
NOPEPSIFORYOU: Use pretty heavy dirt and keep it wet.
ROCKNBIL: Get dirt with a heavy clay content. Water it well and roll it down with a lawn roller. Watering and drying cycles will toughen it up.
MIKEWZ: I use logs as a base for my jumps. It saves time.

My engine only runs with the glow igniter installed

BLUEGHOST: I have changed glow plugs and fuels but to no avail; what should I do?
MAXXBLASTER: Take out the glow plug. If the coil is wet with fuel, you're running rich.
STEVEPOND: Get the engine started and pinch the fuel line. If 5 to 10 seconds pass before the engine stalls, the fuel mixture is too rich. The engine should stall within approximately 3 seconds with an increase in rpm.

BE HEARD! LOG ON AT RADIOCONTROLZONE.COM

T4 TQS AND WINS HOT ROD SHOOTOUT

In its very first competition, the Associated T4 piloted by Team Associated/Reedy driver Billy Easton TQ'd and won the 6th annual Hot Rod Hobbies Off-Road Shootout's Mod Truck class. According to the Associated camp, Easton hasn't driven the T4 much, but it sure didn't look that way. Teammate Jared Tebo secured second overall by consistently finishing third throughout the triple A-mains; Travis Amezcua rolled his T4 into fourth overall. Only Brian Kinwald was able to prevent the T4 from taking the top three spots; he parked his Team Losi Triple-XT in third.

Easton & Pavidis ace nitro nats

Action RC in Oklahoma City, OK, hosted the annual ROAR Fuel Off-Road Championship this year. The race drew a huge turnout, and the biggest names in RC occupied all of the A-main slots. Billy Easton took first place in 1/10 Truck with his Team Associated RC10 GT. Team Losi's Adam Drake nabbed second and teammate Jukka Steenari rounded out the top three. Kyosho driver Mark Pavidis smoked the competition in 1/8 Buggy with his Inferno MP 7.5; Jason Ashton and Josh Wheeler finished second and third, respectively.

GENERAL SILICONES FINDS NEW DIGS

The General Silicone Group Inc. crew has relocated to a larger facility in the same building complex because it outgrew its previous location; the GS Racing Vision Pro touring cars and Storm RTR buggies must be selling well. If you would like to contact the company, the phone number is still (626) 338-3815, but its new address is 14140 Live Oak Ave., Baldwin Park, CA 91706. You can also email info@generalsilicones.com; visit generalsilicones.com and click on "Visit our RC Division."

"Every big race should have a fun, family atmosphere if we want our sport to grow. Big races without novice or sportsman classes intimidate new enthusiasts." –Global Hobby/KTM Racing's Craig Kaplan.

SPEED SHOP

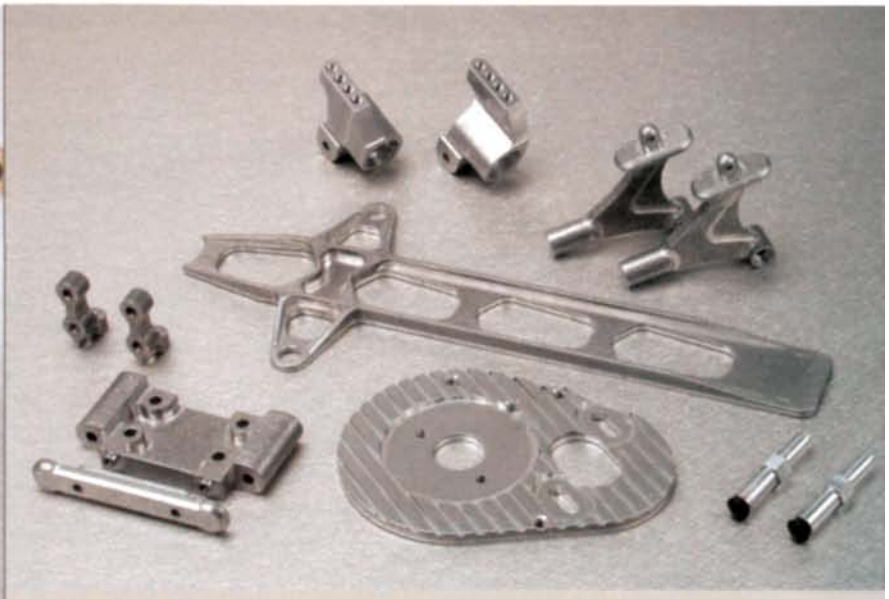
TEAM ORION

Orbital 2R Pro BB and Mach-Mod

Team Orion recently released updated versions of its Orbital machine-wound modified motors. Because it has world-championship TOP motor components, Orion claims that the Pro BB is comparable to its hand-wound counterparts. Stronger G12 magnets, dual ball bearings, adjustable timing, installed surface-mounted capacitors and bullet connectors are standard.

The less expensive Orbital 2R Mach-Mod combines the construction of the Pro BB with dual bushings instead of bearings and a fixed endbell. Both motors are available in many winds from 21-turn, single-wind up to 19-turn triple.

Orbital 2R Pro BB and Mach-Mod—item nos. vary with wind; $49.99 (Pro BB), $32 (Mach-Mod).
Team Orion Inc. (714) 694-2812; team-orion.com.



RACERS EDGE

CNC aluminum B4 parts

Although the Team Associated B4 buggy has been out only for a few months, there are already tons of factory and aftermarket parts available for it. Racers Edge will soon release a line of CNC-machined aluminum parts and accessories produced by Titan Tech for the venerable B4: a front hinge-pin brace, a front bulkhead, servo mounts, a heat-sink motor plate, a battery hold-down strap, wing mounts, and four rear hub carriers (0, ½, 1 and 1½ degrees of toe-in). The hub carriers feature vertical ball stud mounting holes and a fourth "D" ball stud mounting position that is preferred by many top drivers. Racers Edge will also offer screw-type aluminum front axles that use button-head screws instead of locknuts to hold the rims. The parts shown here are prototypes, but the production pieces will be CNC-machined and hard-anodized.

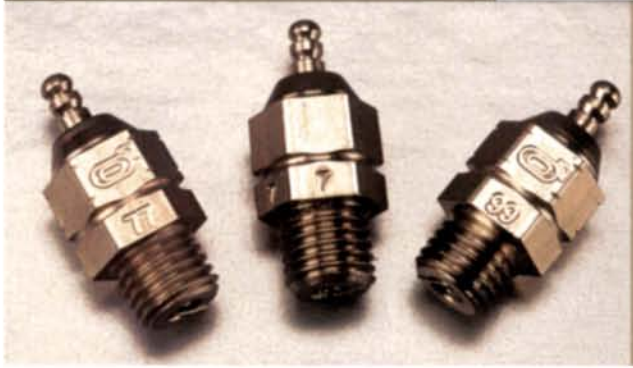
Front axles—9405
Front hinge-pin brace—9410
Front bulkhead—9415
Servo mounts—9420
Battery hold-down strap—9425
Motor plate—9430
Rear hub carrier 0, ½, 1, 1½ degree—9435/9436/9437/9440 (prices not yet determined by manufacturer).
Racers Edge (801) 978-9501.

TAMIYA

TRF short damper-spring set

Lowering the ride height for on-road performance is a common practice for serious racing. Tamiya's new TRF short damper-spring set allows racers more tuning flexibility when they lower a car's ride height, and it expands setup options. The four spring rates available are color-coded for easy identification: red (soft), yellow (medium), blue (hard) and white (extra hard).

TRF short damper-spring set—53630; $3.30.
Tamiya America Inc. (800) 826-4922; tamiyausa.com.



O'DONNELL

High-performance glow plugs

Many nitro racers use O'Donnell's new high-performance glow plugs because they provide great performance and are extremely durable. Many report that these plugs continue to offer excellent performance even after they've been used with engines that have gone through three or more gallons of fuel. The OD077 is a standard long plug with a medium heat range and is ideal for ⅒-scale, on-road and off-road applications. The OD099 is a medium-length cold plug that works best for ⅛-scale, on-and-off-road cars and trucks. Slightly shorter versions with the same heat ranges are available to fit O.S. engines.

⅒-scale (long, medium heat range)—OD077 & OD077OS; $5.99;
⅛-scale (medium, cold)—OD099 & OD099OS; $5.99
DuraTrax/O'Donnell; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; duratrax.com.

SPEED SHOP

XRAY

One-way differential set

If you enjoy racing an XRAY series touring car on a long, sweeping track, then XRAY's one-way diff is for you! Its halves are made of a lightweight alloy that has been machined to help reduce their weight. The diffs' special, spring steel adapters are hollow and feature an exclusive double-slot design. XRAY machines two, one-way bearings from INA in Germany to precisely fit its one-way diff. The lightened pulley has 34 teeth and is covered with special snap-on "side click-covers" that help protect the unit from debris.

One-way diff set—305100; $34.95.

XRAY; distributed by Serpent USA (305) 639-9665; teamxray.com.

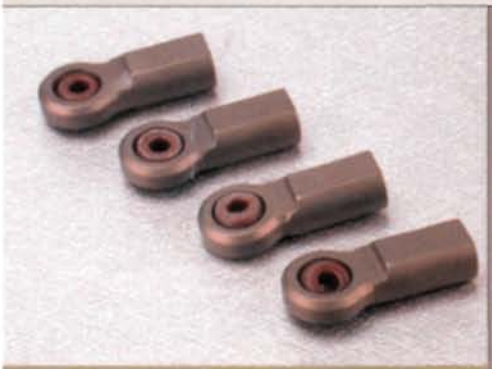
FIORONI

Option Team foam air filter elements

In addition to its popular standard 2-stage foam air-filter element (OT-SF01), Fioroni has developed a ribbed 1/8-scale foam air filter element with more surface area to increase airflow to the engine. They fit the Fioroni aluminum air filter (OT-92304) and GS/Kyosho 21 air filters.

Air filter foam—OT-SF02 (fits Fioroni), OT-SF03 (fits GS/Kyosho .21 engines); $7.99/each.

Fioroni Option Team; distributed by General Silicones Group Inc. (626) 338-3815; generalsilicones.com.



RACERS EDGE

1/8-scale aluminum shock-shaft rod ends

These heavy-duty aluminum shock-shaft rod ends from Racers Edge are manufactured by Titan Tech and CNC-machined from aircraft-grade aluminum and hard-anodized. They are available to fit both 3 and 3.5mm shocks and have special counterbores that are designed to strengthen the shock shafts when they're installed; the balls will never slip out of their sockets and the ends won't strip. Team Kyosho driver Greg Degani used them when he won the IFMAR World Championship.

Aluminum rod ends—7530 (3mm), 7535 (3.5mm); pricing not available.

Racers Edge (801) 978-9501.

FIORONI

Option Team .21 dual-chamber tuned pipe

Made in Italy by Fioroni, this 2-chamber, polished pipe is ideal for monster-truck applications. It comes with a pre-soldered pressure fitting and an oversize stinger, and it features the cool-looking Fioroni logo.

Dual-chamber tuned pipe—OT-MA03; $48.99.

Fioroni Option Team; distributed by General Silicones Group Inc. (626) 338-3815; generalsilicones.com. ■

UNDER THE HOOD

Mike Walker
CEN Fun Factor MT2

EQUIPMENT USED

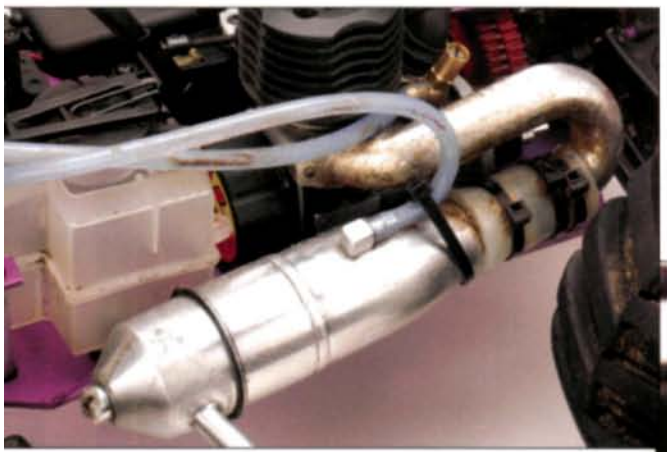
Transmitter: Airtronics M8
Receiver: Airtronics 92836 FM
Steering servo: Airtronics 94257
Throttle servo: Airtronics Sanwa ERG
Fuel: Byron's 20% Race Fuel
Engine: CEN NT-16
Glow plug: CEN
Tires: Stock
Body: Stock
Gearing: 11/14; 44/47

SETUP	FRONT	REAR
Camber	3 deg. negative	3 deg. negative
Toe-in	2 deg. in	3 deg. in
Ride heigh	Arms slightly above level	Arms level
Steering link mount	Outer hole	
Shock oil	70WT	70WT
Shock pistons	2-hole (black)	2-hole (black)
Shock springs	Stock	Stock
Shock limiters	4mm outer spacer	
Shock mount (tower)	Outside hole	Outside hole
Shock mount (suspension arm)	Outside hole	Outside hole
Diff grease/oil	Stock grease	Stock grease

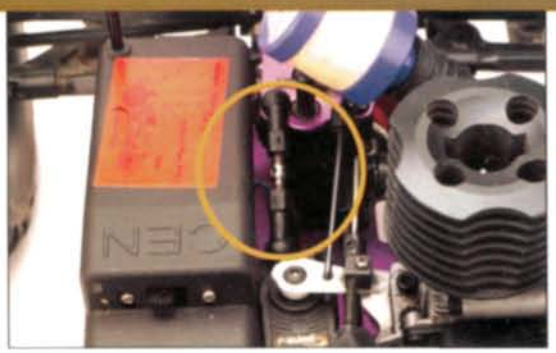
FACTORY AND AFTERMARKET OPTIONS

- CEN CT4 aluminum dual-chamber tuned pipe
- CEN MT soft-foam tire inserts

Mike races with the stock CEN NT-16 engine and an aluminum, dual-chamber tuned pipe from CEN's CT4 touring car.



Mike cut a little of the outer sections off the front tires' chevron paddles to gain a little more grip; removing this small section of tread also reduces the wheels' rotating mass.



A torque rod installed between the rear aluminum chassis brace and the steering servo reduces chassis flex and improves handling. Mike replaced the stock throttle servo with a faster, more powerful Airtronics unit.

FACTORY DRIVER HOT MOD

Mike replaced the stock 75cc tank with a 125cc tank from a 1/8-scale buggy. He had to grind material from the upper deck to make room for the tank, but it now fits perfectly. The larger tank allows run times that are nearly twice as long as the stock tank's.

5 QUESTIONS

DRIVER: Mike Walker
AGE: 24
LAST BIG WIN: 97 NORRCA Nationals, Expert Mod Truck
SPONSORS: CEN Racing, Genka Trading Corp., Byron's Originals, Team Orion,
WHEN I'M NOT RACING: I relax and have a good time with people I care about.

RC CAR ACTION: How long have you been racing, and which is your favorite racing class?

MIKE WALKER: I started racing back in 1993 at a local track in Moreno Valley, CA. That same year, I attended my first large event, and I was hooked—couldn't stop for a long time. After Associated sponsored me in 1997, I was able to attend almost every major off-road event in the States and a few races in Europe. I really enjoyed those years; I will never forget some of the things that I saw and the people I met. My favorite racing class would be electric off-road. I've been enjoying monster truck races lately because they give me the chance to race without spending time preparing or practicing.

RCCA: How did you get your job with CEN?

MW: A good friend told me about an opening here; we met, and I liked what I heard. I've been here ever since!

RCCA: What do you do at CEN?

MW: My responsibilities range from maintaining original equipment manufacturing accounts to answering technical questions for our customers. The last couple of months have been really good for CEN Racing, but challenges and obstacles come with success, and they must be overcome for the company to grow.

RCCA: When did CEN start racing the MT2, and has your racing success influenced sales?

MW: We first raced the MT2 at the Sidewinder Shootout. Andy Smolnik and I just wanted to see what we could do with a stock truck. I was excited because I hadn't raced in about two years, and it was the first time I used a pull-starter at a large race. They're nice—much easier than hauling around a starter box.

What wins on Sunday sells on Monday! People are reluctant to buy a truck they have never seen run. Every time we go to a race, people comment on the trucks; they are surprised by how well they perform.

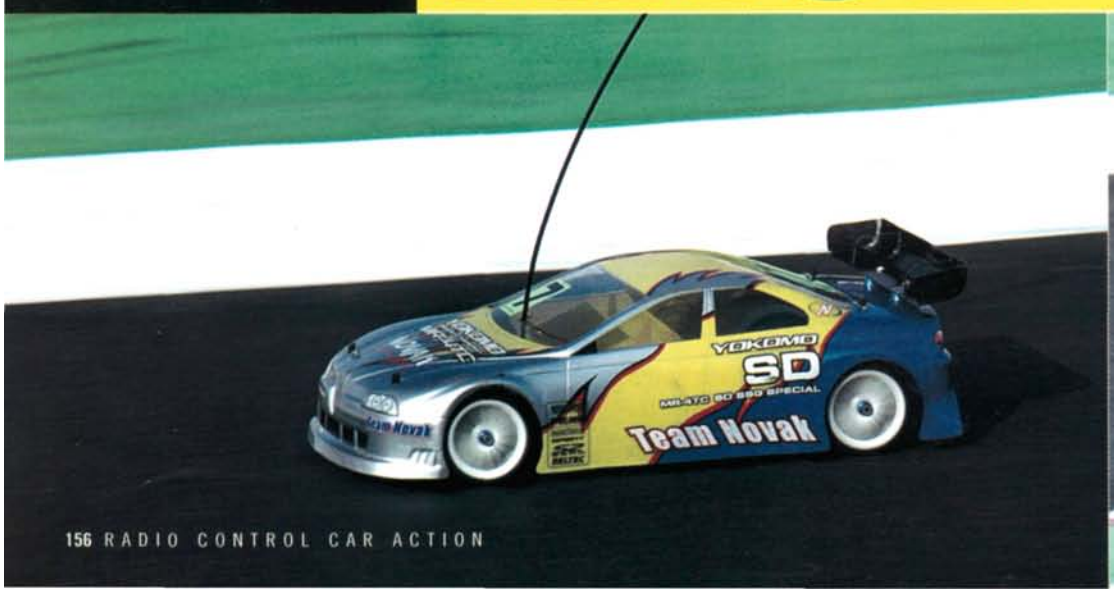
RCCA: The new CEN CT4 R nitro touring car looks as if it has what it takes to compete. Have you had much wheel time with the car? If you have, what are your impressions?

MW: I haven't had much wheel time with it. I'm not much of an on-road person, so I don't know the tricks and secrets of going fast yet. The car responds very well to adjustments and is very stable on the track. I'm sure it won't be long before the CT4 R takes its first win.

2003 REEDY TOURING CAR RACE OF

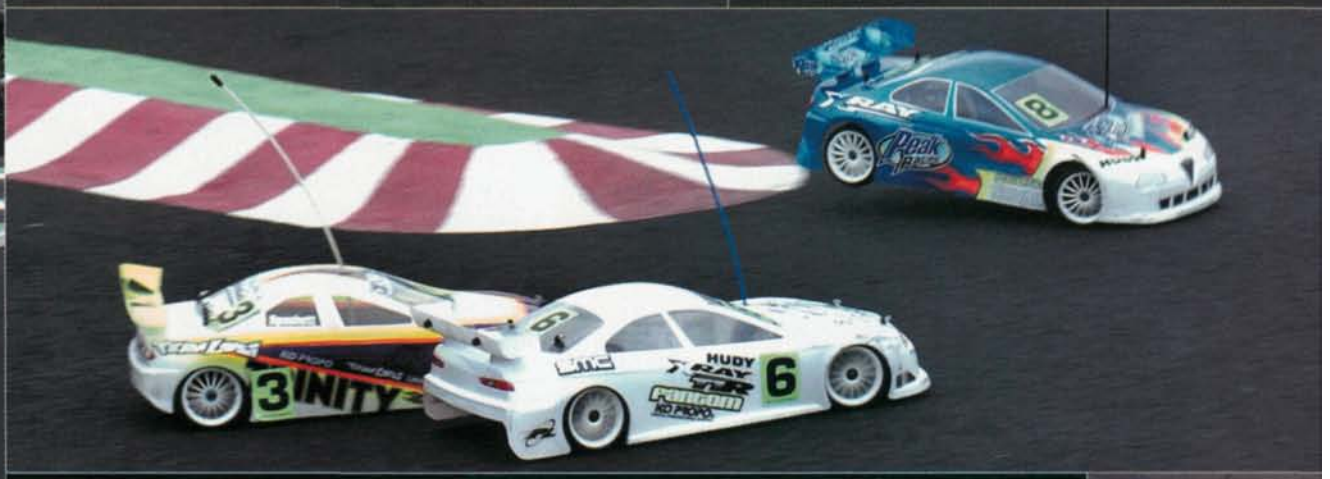
by Jason Sams

SPONSORED BY:
RC CAR ACTION • REEDY • TAMIYA USA • TAKE-OFF



Rob Michael dipped just inside Arthur Tsui for the pass.

The Drake was able to lay down some fast times, too. He finished third in Open Modified; that isn't bad, considering he's an off-road guy.

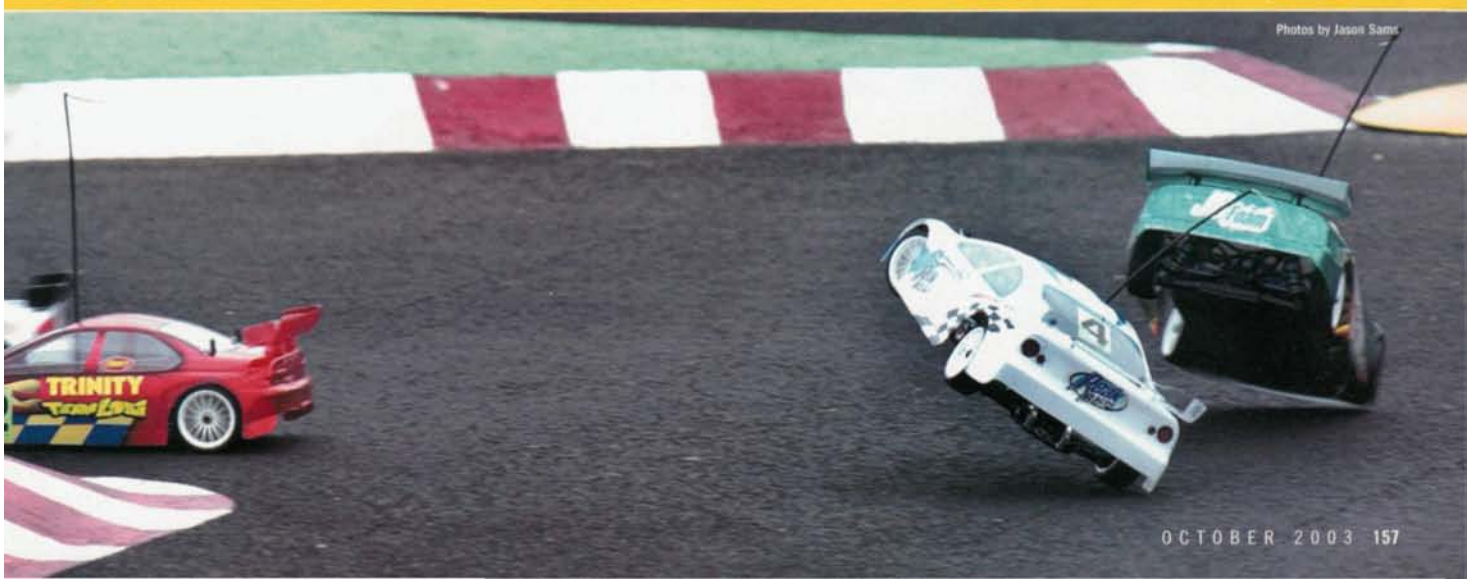


Kickin' asphalt

EVERY YEAR IN LATE SPRING, the fastest on-road drivers from around the world are invited to race at the Reedy Invitational Touring Car Race of Champions. The Reedy TC Race may not be a sanctioned racing event, but it's as prestigious and competitive as any world championship event I've ever been to. At this year's race, drivers from Japan, Thailand, England, Germany, Holland and, of course, the U.S. competed for the honor of being crowned as Reedy Invitational Class Champion. Some of the races were decided by tenths of a second, and that kept the spectators—and the racers—on the edge of their seats the entire weekend.

CHAMPIONS

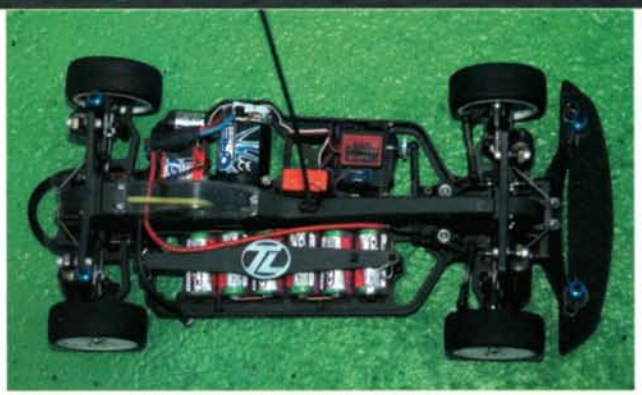
Photos by Jason Sams



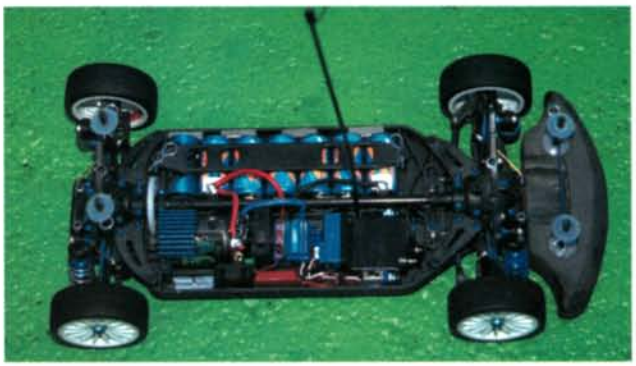
REEDY RACING ACTION

Invitational Class

After the first four rounds, Team Trinity/Team Losi driver David Spashett led with the lowest score, and Team Associated/Reedy driver Barry Baker was a close second; holding down third was Yokomo's Chris Tosolini. It was anybody's race going into the final day of racing. Baker and Spashett brought everything they had to the table on Sunday. Yokomo driver Masami Hirosaka also brought his A game; he won three of his final four rounds, and that put him in the hunt for the overall championship. Baker was consistent both days of racing, laying down two firsts and one second place the final day. Spashett also won one race on the final day and tallied two second place finishes. This put Hirosaka, Baker and Spashett in a three-way tie with eight points each. The officials had to look to their "throw-out" scores to determine the finishing order. Baker was the more consistent throughout all eight rounds and rightfully took home the cheddar. Spashett earned second, and Hirosaka took the final podium spot.



Josh Numan drove this Triple-XS to Open-Mod victory.



Barry Baker took home the Invitational Class win with his TC3.

Open Modified Class

Andrew Cartwright TQ'd the Open Class, and second qualifier Josh Numan and third qualifier Adam Drake rounded out the top three. In the first Main, Cartwright walked away with the victory and his Schumcher Mission was the only car to make 22 laps. Cartwright's car broke during the second Main, and that opened the door for Brent Thielke to win the second leg. In the third race, there were quite a few drivers—including Cartwright and Thielke—who could have won the class. Numan was in position to take the overall if he won the final Main, and Thielke finished outside the top two.

In the final race, Cartwright moved out in front with a comfortable lead. Like a bloodthirsty shark, however, Numan's Triple-XS was in his wake and gaining on him. With about a minute left in the race, Numan was all over the rear fender of Cartwright's sedan, and he managed to get by him on the next lap. Cartwright didn't go away easy, though. Just one lap later and with very little time left on the clock, Cartwright tried to sneak inside Numan. The two cars collided and went off track. Cartwright proved to be a class act; since he caused the crash, he let Numan resume the lead. The two raced to the finish line as the crowd cheered and Numan edged out his racing foe by a little over a tenth of a second. Cartwright took second overall with Adam Drake earning third.

Top left: it just wouldn't be a Reedy Touring Car Race of Champions without legendary motor tuner Mike Reedy there. All weekend, Reedy worked on motors for his team drivers.

Top center: before each race, the drivers had their cars inspected in "Tech" to make sure the cars were of legal weight, that spec tires were being used, that the motors were legal and that the bodies fell within the race guidelines. After each race, the cars went through a second "Tech" inspection to ensure that no one had cheated.

Top right: Tyree Phillips and Troy Schroeder collaborated on the National Anthem before the Mains. Tyree was silky-smooth with his soprano saxophone, and Troy belted out the words to the song. Well done, guys!

19-Turn Class

Rod Canare was king for the weekend sitting as the TQ and was so fast with a 19-turn motor Tamiya Evo III that he could have been competitive in the Open Class. In the Mains, Canare won the first race fairly easily. In the second, he was banged around a little, and that allowed Charlie Suangka to take the victory. In the final Main, Canare was back out in front trying not to screw up. He was able to fend off hard-charging Dave Berger who took second overall with his Alex Racing Barracuda. Third place went to Tom Hibler, and with two wins, Canare took home the big first-place trophy.

Reedy's Rules

INVITATIONAL CLASS

The 30 invitational drivers competed in eight rounds of racing to determine the winner. The eight drivers in each heat raced heads-up against each other, and the heats were shuffled between rounds to keep things exciting. The racers in each heat received one point for first, two points for second and so on. After eight rounds of racing, each racer's two worst rounds were thrown out, and the points from the remaining six rounds were tallied to determine their final scores. Several racers were tied after the final round of racing, so their throw-out rounds were factored in to break the ties.

OPEN CLASS & 19-TURN CLASS

The Open and 19-Turn classes used a "Qual Points" system to determine the qualifying positions for the triple A-mains. After each of the four qualifiying rounds, every driver was ranked. The TQ of each round received 0 points, the second qualifier received two points, third qualifier three points, and so on. Each driver's two highest scores were thrown out, and the remaining two were added together. From there, triple A-mains determined the winner.

Oscar Jansen worked around the clock to ensure that the Team Orion drivers' motors were dialed in. Jansen worked on a new V2-based motor that Team Orion calls "The Revolution." Jilles Groshamp used it the entire weekend, and his car was wicked fast.

FAST RACE FACTS

- Barry Baker's Invitational Class win gives him his second consecutive Reedy Invitational Race win.
- Eight countries were represented at the 2003 Reedy Touring Car Race of Champions.
- With four Triple-XS sedans in the Top 10, Team Losi put more cars in the Invitational A-main than any other team.
- No one-way pulleys were allowed, so all the cars had dual differentials.
- With a 19-turn spec motor, Rod Canare posted two 21-lap runs during the Mains. That would have put him in the middle of the pack in the Open Mod Class. This shows that skill prevails over horsepower.
- A 10-turn motor limit was strictly enforced in the Invitational Class.
- The winner of the Open Mod Class (Josh Numan) will be automatically bumped up to the Invitational Class at the next Reedy TC Race.
- If you make the A-main in any one of the classes at the Reedy TC Race, you are one hell of a driver.

INVITATIONAL CLASS—DRIVERS FROM ALL OVER THE WORLD WERE INVITED TO PARTICIPATE IN THIS CLASS.

FIN.	DRIVER	COUNTRY	CHASSIS	MOTOR	ESC	RADIO	CELLS	BODY
1	Barry Baker	U.S.	Associated TC3	Reedy KR	LRP	Airtronics	Reedy	Protoform Alfa Romeo 2.0
2	David Spashett	England	Losi Triple-XS	Trinity D5	LRP	KO Propo	Trinity	Losi
3	Masami Hirosaka	Japan	Yokomo SD	Reedy KR	GM	KO Propo	Yokomo	Protoform
4	David Jun	U.S.	Tamiya TB Evo Surikarn	Reedy KR	Novak	Futaba	Reedy	Protoform
5	Mark Pavidis	U.S.	Associated TC3	Reedy KR	LRP	Airtronics	Reedy	Protoform
6	Jukka Steenari	Finland	Losi Triple-XS	Team Orion	Novak	Airtronics	Team Orion	Losi
7	Craig Drescher	England	Associated TC3	Reedy KR	LRP	KO Propo	Reedy	Protoform
8	Chris Tosolini	U.S.	Yokomo SD	Reedy KR	LRP	Airtronics	Yokomo	Protoform
9	Matt Francis	U.S.	Losi Triple-XS	Trinity	LRP	Airtronics	Trinity	Losi
10	Greg Hodapp	U.S.	Losi Triple-XS	Peak	Novak	Airtronics	Peak	Losi

OPEN MODIFIED CLASS

FIN.	QUAL.	DRIVER	CHASSIS	MOTOR	ESC	RADIO	CELLS	BODY
1	2	Josh Numan	Losi Triple-XS	Team Orion	Novak	Airtronics	Team Orion	Team Losi
2	1	Andrew Cartwright	Schumacher	Fantom	Keyence	Airtronics	SMC	Protoform
3	3	Adam Drake	Losi Triple-XS	Trinity	Novak	Airtronics	Trinity	Losi
4	10	Ryan Cavalieri	Losi Triple-XS	Trinity	Novak	Airtronics	Trinity	Losi
5	8	Brent Thielke	Associated TC3	Team Orion	LRP	Airtronics	Team Orion	Protoform
6	6	Toshiko Hara	Tamiya Evo III	Reedy	Novak	Airtronics	Reedy	Protoform
7	4	Thad Garner	HPI Pro 3	Reedy	LRP	Airtronics	Reedy	Protoform
8	9	Tyree Phillips	Losi Triple-XS	Novak	Novak	JR	Novak	Losi
9	5	Mike Truhe	Losi Triple-XS	Team Orion	Novak	Airtronics	Team Orion	Losi
10	7	Jason Moberly	Yokomo SD	Trinity	LRP	KO Propo	SMC	Losi

19-TURN CLASS

FIN.	QUAL.	DRIVER	CHASSIS	MOTOR	ESC	RADIO	CELLS	BODY
1	1	Rod Canare	Tamiya Evo III	Spec	Novak	Futaba	Pro-Match	Protoform
2	7	David Berger	Alex Barracuda	Spec	Novak	KO Propo	*	Protoform
3	3	Tom Hibler III	Tamiya Evo III	Spec	Novak	Futaba	KMR	Losi
4	2	Charlie Suangka	Tamiya Evo III	Spec	Novak	Airtronics	Novak	Losi
5	6	Pat T. Thovornthon	Yokomo SD	Spec	KO VFS	Airtronics	Integy	Protoform
6	8	Dan Garber	Tamiya Evo III	Spec	LRP	Futaba	SMC	Protoform
7	4	Joey Orlanes	Yokomo SD	Spec	Novak	Airtronics	Integy	Losi
8	9	Arthur Tsui	Yokomo SD	Spec	Futaba	Futaba	Integy	Protoform
9	5	Rob Michael	Corally Assassin	Spec	Corally	Airtronics	Corally	Protoform
10	10	Robert Itoh	Yokomo SD	Spec	LRP	Airtronics	SMS	Protoform

** Driver did not provide information.*

NEW ON-ROAD RIGS

ALEX RACING Barracuda R2

Dave Berger ran an all-new Barracuda R2 at the Reedy Race. He finished second overall in the 19-Turn Class; that's impressive considering this was the car's debut in the States. For more information, take a look at alexracingusa.com.

CORALLY USA Assassin

Corally USA's Rob Michael ran the new belt-drive Corally Assassin in the 19-Turn Class. He was pretty darn fast with the car, too; he qualifed fifth and finished ninth overall. For more information on this new ride, check it out at corallyusa.com. ■

Get the most out of your COMPUTER

by Lito Reyes

Getting your first computer radio is exciting. Those first thoughts are usually something like: "Man, now I'll dominate the track! Multiple models, hyper-concentric servo control, sweat-proof trim ... wait till the other guys see this!" Then you get on the drivers' stand, and reality sets in: your steering is reversed, you have no brakes, the throttle is set like a light switch, and the radio beeps angrily.

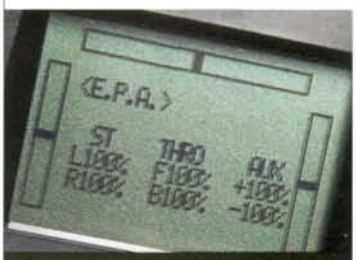
Most radio manuals are easy enough to understand, but it's also easy to skip over some of the details in the excitement to get out on the track. I will go over some of the things you might have missed in Computer Radios 101 and clue you in on how to get more out of your toy ... I mean, tool.

RADIO

Transmitter tuning

TAMING YOUR STEERING

Endpoints, dual rate, exponential and throw rate. Most racers will adjust two, maybe three, of these settings, but all these can considerably affect your car's handling. Adjust these features in the order they're dealt with here.

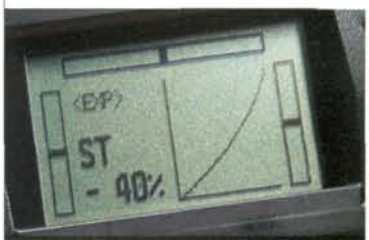


This transmitter's EPA (endpoint adjustment) is set for 100 percent in both directions.

■ **Endpoint.** This is how far the servo moves from neutral in both directions. Set the movements on each side independently by turning the steering wheel or moving the throttle all the way in one direction. The servo will buzz if its range of travel is greater than the limits of steering or throttle throw. If so, back off the endpoint adjustment until the servo no longer buzzes. If there isn't enough servo travel to maximize steering and throttle movement, increase the endpoint settings.

■ **Dual rate.** This adjusts the steering throw for both servos simultaneously. Modify this setting on the track after you've adjusted the endpoints. The dual-rate switch (or dial, on most radios) is near the wheel, where it is easily accessible. Use it to quickly dial out some steering on slippery tracks to avoid oversteering; on high-bite surfaces, leave it at 100 percent.

Here, dual rate (D/R) has been reduced to 60 percent (ST indicates steering).



A vehicle controlled by this transmitter will be less sensitive and easier to drive because of its negative exponential setting. The graph shows how steering will increase through its range.

■ **Exponential.** Are you ham-fisted, i.e., you constantly over-correct the steering to get your car to run straight? Exponential can really make your car easier to drive. It lets you set the sensitivity of the steering wheel/servo connection without adjusting the endpoint of the servo travel—meaning that by adding positive exponential, your steering will be very sensitive right around the neutral point (read: twitchy). Adding negative exponential lessens the response around the center, so the car feels slightly tamer in comparison. Keep in mind that there are conflicting standards for positive and negative exponential; one radio's positive might be another's negative. Check your manual to know how your radio works.

■ **Throw rate/steering speed.** This fine-tuning option lets you program the servo to react with varying speeds. For example, you could set a steering servo to turn right at regular speed, but on its way back to center, slow down to 25 percent of its regular speed. This setting lets a car turn more smoothly and prevents the chassis from violently shifting all its weight and getting out of shape.

This transmitter displays a servo that has been set to turn more slowly than is normal. "Turn" indicates the speed of the servo moving away from center, and "Return" shows the speed back to center.

TUNING YOUR THROTTLE

Endpoints, traction control, brake endpoint and ABS (anti-lock braking system)

Electric racers: set your throttle endpoints to 100 percent before you set up your speed control; that's it, you've finished!

Nitro heads: this affects you, so pay attention.

Brake travel (TH-BRK) on this transmitter is less than throttle travel (TH-FWD).

■ **Endpoints.** Though often neglected, this important throttle setting controls how far your servo extends. You don't want to over-extend your throttle and brake linkages or they may break; and if they don't break, they will bind, and that means a jammed-up servo that could be damaged or draw more precious current from your receiver pack. Set the forward endpoint so that the servo travels only far enough to open the throttle completely. Then set the reverse endpoint according to the track conditions, which will ultimately determine the braking force required on a particular running surface.

■ **Traction control.** This added radio setting gives the nitro racer similar functions to those of an electric racer's current limiter, preventing wheelspin off the line and out of corners. There are two types of traction control: one is throttle exponential; it works just like the steering exponential, but on the forward side of the channel; the other is trigger-point mapping, which lets the racer program amounts of servo throw based on how far he pulls back the trigger. This is also used to compensate for the power-band characteristics of a particular nitro engine. For example, a rotary carburetor can be set to respond more like a slide carburetor and vice versa.

Here, throttle exponential has been adjusted to a negative value to smooth throttle response and make the car less likely to spin out.

■ **Brake endpoint.** This often overlooked feature is especially useful in ⅛-scale classes with long Mains that last from 45 minutes to 1 hour throughout which brakes may fade. Brake endpoint is usually accessible from a thumb switch on the transmitter's handle, so you can make on-the-fly adjustments without scrolling through a menu. Just be sure to leave some room in the linkage for adjustments caused by wear.

■ **ABS.** The purpose of ABS is to help prevent the wheels from locking up and skidding and causing you to lose control. The ABS mode pulses the brakes very quickly, so they don't grab and lock up. You can program frequency (the rate at which the brakes pulse), amplitude (how far the servo moves when applying the pulsed brakes) and delay time (how long after the brakes are applied before they start to pulse). If you run a rear-wheel-drive car or use a one-way front diff on a 4WD car, definitely experiment with your radio's ABS settings to get more braking control.

This screen shows the ABS adjustments and that the feature has been turned off.

If you have a JR XS3, Airtronics M8, Futaba Magnum 3PK, Hitec Aggressor CRX, KO Propo EX-1, or any other computer radio, these tips will help you to maximize your performance at the track.

Here, steering subtrim has been altered by 3 degrees for a perfectly centered servo.

SERVO SUBTRIM

Adjust this before you adjust any of the digital trims. Subtrim increases or decreases the servo's range of motion by the same amount on both sides and in very small increments. Conversely, trim alters the position of the servo's output shaft.

Use subtrim to center the servo before you install the servo horn, and you'll have the same range of motion on both sides. If you use trim to do this, the servo's range of motion won't be the same on both sides. Note that a 1-degree change in subtrim is not the same as a 1-degree trim change, so use just enough subtrim to center the servo before you install the servo horn.

IDLE-UP

Another feature for nitro heads only! This very simple function moves the throttle servo forward to a programmed position, usually by pressing a button. This makes it easier to start a nitro car by opening up the carburetor a bit more than the idle setting. When the engine is warmed up, you just click off the idle-up, and the idle setting returns to normal.

This idle-up setting will increase the throttle's open position at idle by 19 percent to make the engine easier to start.

This screen indicates a high-traction ("HiBt") setup for a B4 car.

MAKE THE MOST OF YOUR MEMORY

The best thing about a computer radios is that it stores multiple car settings. If your radio has free memory slots available, make copies of your existing car setups, and modify them for use in different conditions. For example, the "SedanHiBite" memory might have the dual rate set to 85 percent for more steering and a traction-control setting for more punch. The "SedanSlick" memory might have a dual rate of 70 percent and a very conservative throttle mapping to prevent wheelspin.

TIMERS

Most high-end computer radios have some sort of timer function—at the very least, a countdown or count-up timer and, if you're lucky, a lap counter. The lap counter/timer is a great feature as it lists and stores the lap times for your runs (typically, 50 or so can be stored).

A close look reveals that this timer's alarm will sound after 4 minutes. The "Up Timer" setting indicates that the timer will count up from zero.

- Use the countdown timer to help you establish your gearing in the electric modified classes. Set the timer for race length, run until you hear the "buzzer," then see how much run time is left, either on a discharger or by counting how many more laps you can do when the race is over.
- Use the count-up timer to determine fuel consumption on a properly tuned nitro car. Run the car until it is empty, then take 1½ to 2 minutes off the time and use it to schedule your pit stops in races.
- A lap timer provides useful information to determine whether the car setup changes you just made were effective. After every change, compare lap times against your previous runs to see whether they've improved. This is definitely cheaper than buying an external lap-counting device.
- Lap timers/counters are usually activated by pressing a thumb switch or button with your index finger, and they take some getting used to. I once saw a guy who had hooked up a foot switch to trigger his lap timer. Whatever works for you!

Keep in mind that companies have different names for the features we covered here, or a particular feature might not be available on your radio. That's OK; just do the best with what you have. But take the time to learn what your radio can do for you. In the end, with a properly set radio, your driving experience will be much more enjoyable.

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AIRTRONICS (714) 978-1895; airtronics.net.
FUTABA (256) 461-7348; futaba.com.
HITEC (858) 748-6948; hitecrcd.com.
JR RACING distributed by Horizon Hobby (877) 504-0233; horizonhobby.com.
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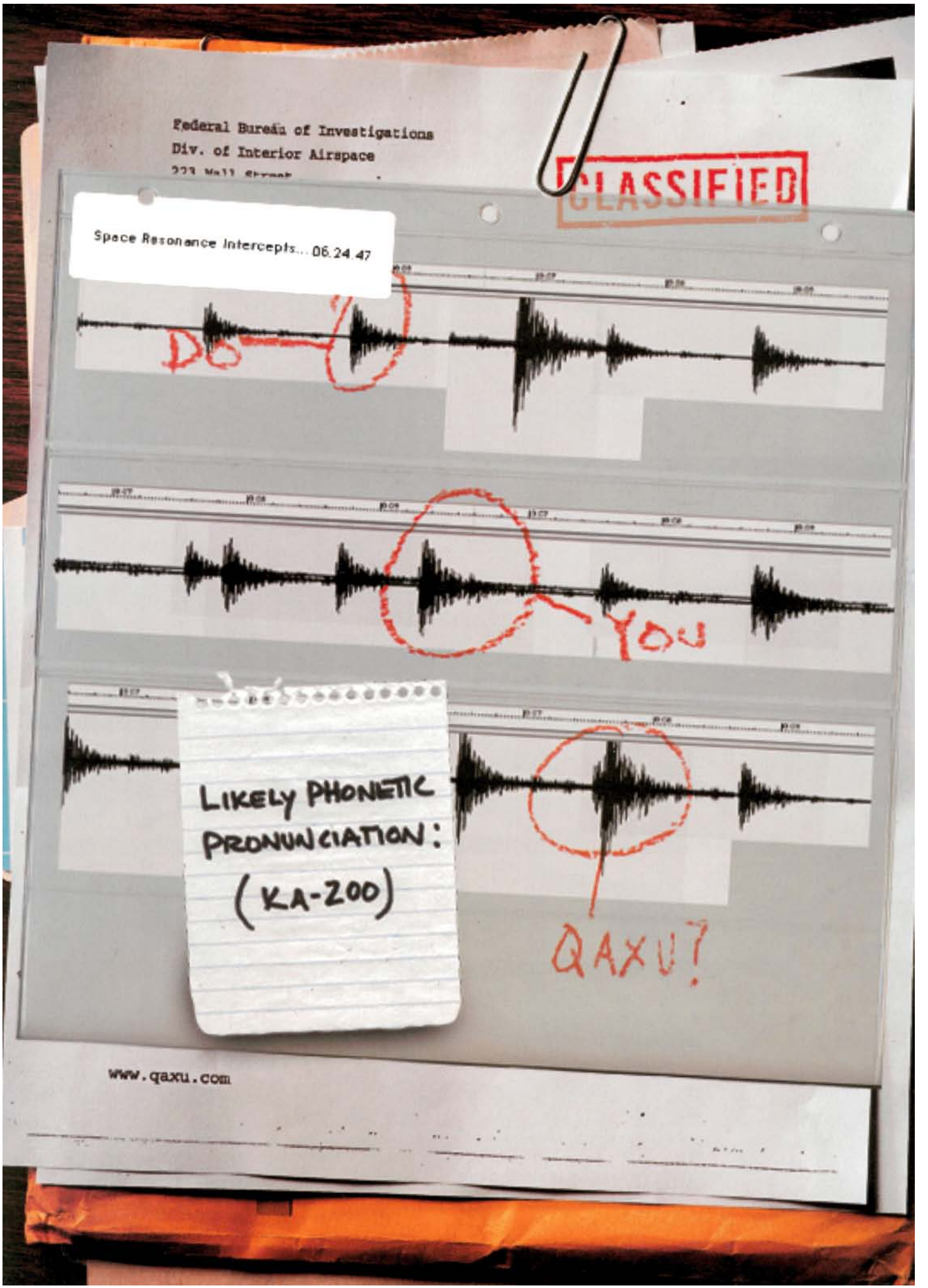
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How to avoid common nitro mistakes

11 ways to keep on track

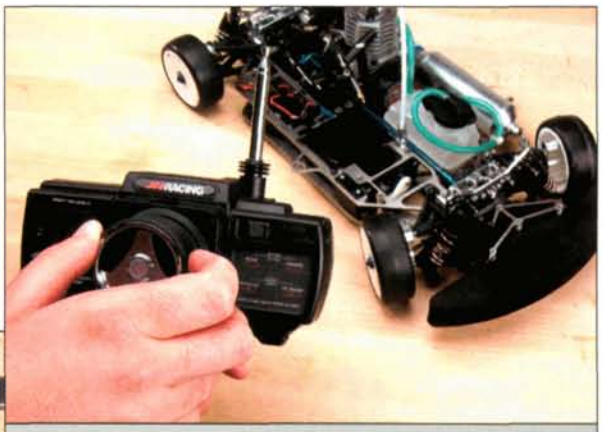
by Stephen Bess

If you've ever mistakenly shoved your right foot into your left shoe or failed to cap the ketchup before shaking it vigorously, you know that such mistakes are easy to make. In the nitro RC world, experts and newbies alike fall prey to similar types of mistakes that prevent their cars from running properly. No matter what your experience level, odds are that you have already encountered or will run into several of these forehead-slapping mistakes. Forethought and paying attention are all it takes to avoid them.

1 STARTER BOX WIRED BACKWARDS

Don't laugh; we've seen it many times! Your engine might start, but the chances are slim. Before you check and replace the glow plug, fuel, fuel lines, etc., make sure the starter box spins the flywheel in the correct direction!

Avoid this mistake by paying attention when you connect your battery and motor wires. Looking directly at the front of the engine (looking straight at the crankshaft), you should see the starter wheel spinning clockwise to spin the flywheel counterclockwise.



2 DEAD TRANSMITTER OR RECEIVER BATTERIES

Check your radio equipment before a day of running your nitro car. Forgetting to turn on, turn off, charge, or replace your transmitter or receiver batteries is high on the list of causes that start an expensive nitro disaster.

Always charge radios and receiver packs overnight before you plan to race. If your system uses alkaline "dry" cells, replace them with fresh ones before a full day of running.

To eliminate the chances of accidentally turning your radio and/or receiver on when transporting your equipment, disconnect the receiver battery from the switch harness, and completely remove the transmitter batteries before you pack your gear. Insert the batteries at the track or wherever you run.

Before you start your engine, always run through a radio-system check to ensure that all controls function properly. If your servos move slowly or not at all, something needs attention.

3 UNSECURED AIR FILTER

An engine's only defense against contamination is its air filter. Run an engine for extended periods in dusty places without an air filter, and you can kiss it goodbye! Zip-tie the filter to your engine's carburetor; you may think it will stay in place on its own because it fits snugly, but one good bump can send an unsecured filter flying. Use a small zip-tie to secure the filter body to the carb neck. Remove any oil or grease that's on the carb neck and the filter elbow with denatured alcohol or nitro cleaner. Next, tighten the zip-tie until it is snug but not too tight (excessive pressure can cause the filter elbow to slip off the carb neck).

4 TOO MUCH FILTER OIL

This is yet another mistake from the "duh!" handbook of what not to do when you prepare your engine for operation. Air-filter elements arrive oiled or dry; if your filter is already oiled, adding more oil will starve the engine of air. Oiling a dry filter too much also equals no air for the engine.

Filter oil is clearly one of those things where more is not better. Avoid choking your engine by using only as much filter oil as is necessary to completely oil it. After you've oiled it, remove any excess by squishing it in a paper towel.

5 DOING THE FILTER-SQUISH

Don't push the filter into the carb to stop the engine. This is a big-time no-no; you can easily push contaminants through the filter element and into the carb or push the element into the carb neck.

Stop your engine simply by picking up your vehicle and touching the tip of your shoe to the flywheel. This works particularly well during a runaway when the engine is revving out of control and you don't want to touch a hot exhaust pipe or carburetor. You could also pinch the fuel line to shut the engine down. To eliminate the possibility that you'll inadvertently contaminate your engine, stop it in the proper way.

6 NO FUEL

At some point, nearly every experienced nitro junky has attempted to start an engine without fuel. It's an easy—and embarrassing!—mistake.

Before you yank the pull-starter or bump the flywheel against the starter box, just check your fuel. This check is especially important after you've taken a break in the middle of a race, as it's easy to forget whether you filled the tank or not!

7 DEAD GLOW IGNITER

Not sure why your engine won't start? Maybe the glow igniter is causing the problem. Rechargeable and alkaline-powered igniters may be out of juice, and this is easily overlooked, especially if your igniter doesn't have a meter. Install a fresh alkaline battery, or recharge your igniter overnight before you hit the track. Not sure whether your plug or the igniter itself has gone bad? Even if your glow igniter has a meter, it tells you only that something isn't working; it doesn't tell you what. Perhaps your battery is dead, or the glow plug is damaged. Try a friend's igniter with your plug, and you'll soon know whether your igniter or your plug is causing the problem. Or try a new glow plug with your igniter. If it doesn't glow bright orange/white, your igniter is out of juice.

8 INCORRECT FUEL-LINE ROUTING

It's easy to be careless and to attach the wrong line to the exhaust pipe, the fuel tank or the engine. Obviously, an engine will not run if the pressure line feeds the carb air instead of fuel. Carefully check your fuel and exhaust pressure lines to ensure they're attached correctly. To avoid making this error, mark the pressure line (or the fuel line—your choice) with a permanent-ink pen. A simple black band will alert you to which line is which.

9 INCORRECT ENGINE ASSEMBLY

When you rebuild an engine, it's important to ensure that the piston is properly oriented. Engines with piston-skirt cutouts allow the piston to drop to its lowest point without striking the crankshaft's counterweight or the backplate.

Many engine backplates have a relief or a groove to allow clearance for the piston, so it's equally important to orient the backplate properly when you install it, or you won't be able to crank the engine over without breaking the piston skirt.

The pistons in engines without piston-skirt cutouts may have holes that align with ports on the sleeve. Consult your engine's manual if you aren't sure how to align the piston properly. Always pay careful attention to the piston's orientation before you remove it from the engine the first time!

10 BAD GEAR MESH

It's easy to set the mesh incorrectly; the gears either bind because the mesh is too tight, or they hardly touch because they barely mesh. An overly tight gear mesh will bind the drive train, overheat your engine and its clutch components, stress the clutch-bell bearings and slow the car considerably. An excessively loose mesh will quickly strip the gears.

To set your gear mesh properly, slip a strip of regular notebook paper between the clutch bell and the spur gear, and then press the engine toward the spur gear while you tighten the engine-mounting screws.

11 NO THREAD-LOCK

We always stress this for metal-to metal contacts, but some people still forget. I'll say it again: use thread-locking liquid! Nitro cars' notoriously strong vibrations will rattle fasteners loose in a hurry. Forget to thread-lock your vehicle's screws, and you may find yourself picking up parts or chasing down runaway wheels after they've vibrated loose.

Take your time to build every vehicle properly by using thread-locking liquid on all metal-to-metal fasteners. Buy the blue "medium" formula; it isn't as permanent as the red "high-strength" formula, but it's stronger than most green "light-hold" formulas.

Put a dab of liquid thread-lock on the screws before you thread them in. Don't use too much; it doesn't do a better job than a small drop.

If you've been into RC for more than a day, you'll know that mistakes are easy to make but just as easy to avoid. Regularly run through this list, and you'll enjoy run time instead of frustration time spent solving problems caused by your mistakes. ■

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BY RICHARD TRUJILLO

ULTIMATE RC ROCK CRAWLING

RC truck rock crawling is a growing sport in the U.S. A dedicated group of rock-crawling enthusiasts builds custom trucks to satisfy the need to earn "king of the hill" status, and it has become so popular that members of RC4WD.com and RCMT.net decided to host their first Ultimate RC Rock Crawling event in Southern California. Tamiya USA, Team Orion, Team Losi and RC4WD.com donated prizes for all the winners. Members came from all over Northern and Southern California to participate, and a few dudes even came all the way from Colorado to join in the fun. Let's check out the action.

They even came from Colorado!

When I pulled up to the staging area for the rock crawl, I spotted a license plate from Colorado. I couldn't believe that someone actually drove from that far away just for some RC rock-crawling action! Twelve-year-old Ty Goedl made the 1,100-mile trek to California all the way from Ft. Collins, CO, with the help of his 18-year-old brother, Levi. Ty is a 7th grader from Cache La Poudre Junior High and is an avid RC'er. He lives with his family on more than 40 acres of land where he has built an RC rock-crawling course alongside his BMX track, small snowboard park and trampoline. Talk about having your own extreme Disneyland!

It took Ty and Levi about three days to drive to Cali. Along the way, they stopped at a couple of skate parks, went swimming and, of course, a mini vacation away from the parents wouldn't be complete without a stop in Vegas.

Although Ty was one of the youngest participants, he had by far the biggest rock-crawling monster truck there. As you can see from the photos, Ty based his crawler on a Thunder Tech Racing Tremor conversion kit that he modified with much longer suspension links. His truck also features a couple of Hitec HiTorque steering servos, a Novak Super Rooster ESC and a 10-cell battery pack. With 40 acres of extreme land and permission to go on a road trip to Cali, it looks as if Ty and Levi have a couple of cool parents.

How it works

There was a semiformal classification process and only a few informal rules. In the first class, Clod Busters and TXT-1s ran on a course set up with boulders that were about 2 feet in diameter. The rules were simple: make it through the 30-foot course as quickly as possible. Ten-second penalties were given if a truck touched the marker or if the driver had to touch his truck to get it unstuck or to flip it back onto all fours.

The second class was for Bruisers and Tamiya Cross Country (Pajero) chassis. The course was set up and timed in the same way as the course for the larger trucks was, but to match the much shorter suspension travel of the Cross Country chassis, the rocks were much smaller.

Rock-crawling truck setup tips

If you think you have to be an engineer to build one of these trucks, you're wrong. Here are a few simple tips that will help you to build your own rock crawler.

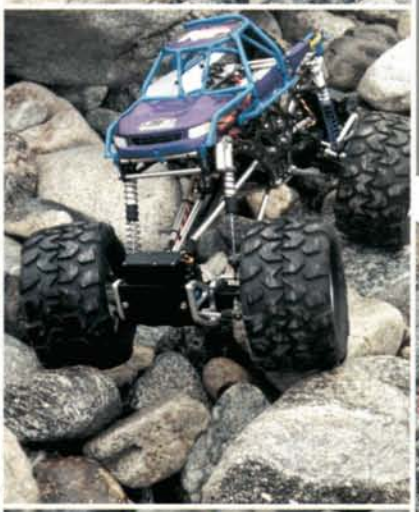
LOCK THE DIFFERENTIALS. This is the most important mod if you want to build a successful rock crawler. Differentials are usually welcome on a truck, but for a rock crawler, they're a detriment. When faced with an obstacle such as a rock, you often approach it at an angle so that your truck goes over it one wheel at a time. When the first wheel starts up the rock, the differential sends power to the opposite wheel, which isn't under load. But with a locked diff, the first wheel maintains constant power, so it's able to get over the rock.

INSTALL SOFT, AGGRESSIVE TIRES. Tires with an aggressive tread pattern that can grip any surface are vital for rock-crawling success. Tires such as Pro-Line's Big Joe 40 Series are a good example of what you should look for. If the tires can't support the truck's weight without inserts, use the softest inserts that will do the job. If the tires themselves are rigid, spray them with WD-40 to soften them. If they flatten out, that's OK; they'll have max traction when rock crawling.

INSTALL STOCK MOTORS, AND GEAR FOR TORQUE. Rock crawling isn't a speed event but rather a slow, calculated ascent. For unhurried, powerful starts over objects, torque is key; tons of rpm will just flip the truck onto its roof. You should also gear your truck low to achieve the same effect.

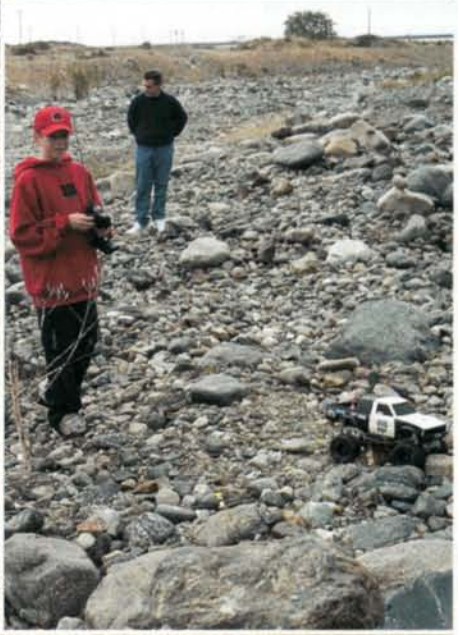
LOWER THE CENTER OF GRAVITY (CG). The need for a low CG may seem obvious, but moving every gram as low it can go will really make a difference. When a truck is rock crawling, it faces steep inclines. If most of its weight is high, the truck will roll over too easily.

ARTICULATION IS KEY. Independent-suspension trucks don't provide enough articulation for them to climb over steep rocks. A solid-axle truck with a 4-link suspension is the way to go. You want to set up the suspension as soft as you can to allow maximum axle articulation without unsettling the chassis.



The course

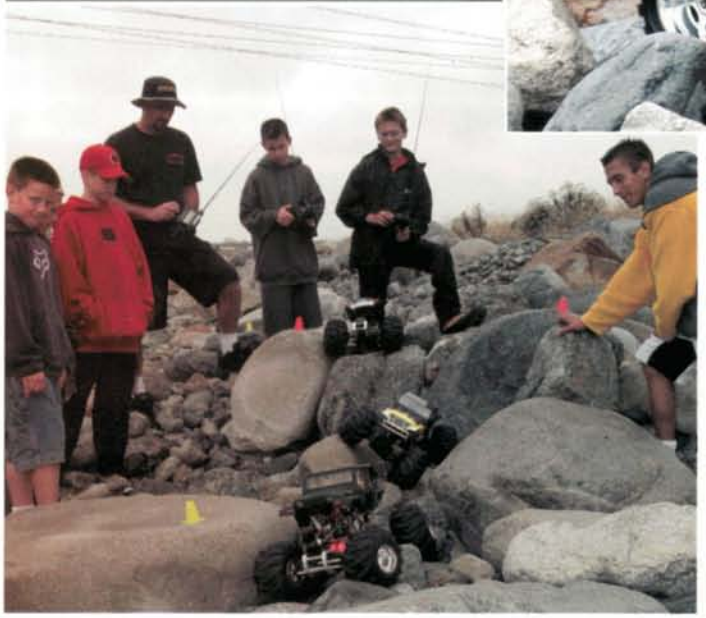
The event was held in Lytle Creek, CA, near the base of the Cajon Pass. The course was laid out in the dry bed of Lytle Creek, and it featured rocks and boulders of all sizes. Sections of the course were so extreme that some of the competitors didn't think their trucks could make it through! Cones were set up among the rocks so that everyone could see the layout.



The competition

It's usually sunny in Southern California, but on that weekend, it decided to rain. The weather made the rocks a little slippery, but it didn't slow anyone down. In the Clod Buster/TXT-1 class, the competition was fierce. Some drivers carefully picked their way through the course, while others just bashed through. Hector Carrios Jr. of Upland, CA, drove his 4-link, Jeep-body Clod Buster to finish third, and Hector Carrios Sr. took second. Brian Jones showed them who was boss; he was crowned the first Ultimate Rock Crawling Champion in the Clod Buster/TXT-1 class.

Since the Tamiya Bruiser is a rare truck and parts are difficult to find, only a few dared to run in the Bruiser/Cross Country class. Yours truly, Richard Trujillo, took the class win with my Tamiya Mountaineer.



In the end

The enthusiasm of the drivers and spectators made this a really fun event. I heard through the grapevine that other rock-crawling events are scheduled, so check out RC4WD.com and RCMT.net for upcoming dates and locations.

Will RC rock crawling become the next competitive RC class? I sure hope so, but only time will tell.

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TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

TEAM LOSI distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

TEAM ORION INC. (714) 694-2812; team-orion.com.

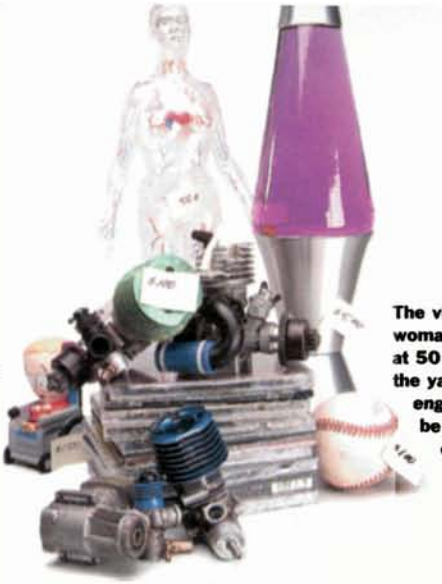
Used or abused?

How to buy smart when you buy a "pre-owned" engine

BY STEPHEN BESS

If you're in the market for a hi-po nitro powerplant but your budget can't take the sticker shock of a new engine, you might consider buying a used engine from a friend, or an online auction site or bulletin board. Though the prices may be right, what you buy may not be all it's promised to be. Before you plunk down your greenbacks, you should realize that only by physically examining an engine can you determine whether it's all it's claimed to be.

By doing the checks described here, you'll quickly be able to determine whether a particular used engine is worth buying.



The visible woman is a steal at 50 cents, and the yard sale engine could be a bargain... or a big mistake.

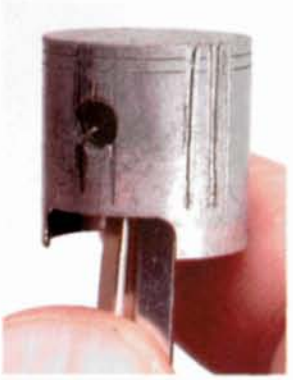
PISTON AND SLEEVE WEAR

This quick check can be done with the engine assembled; the rest require some disassembly.

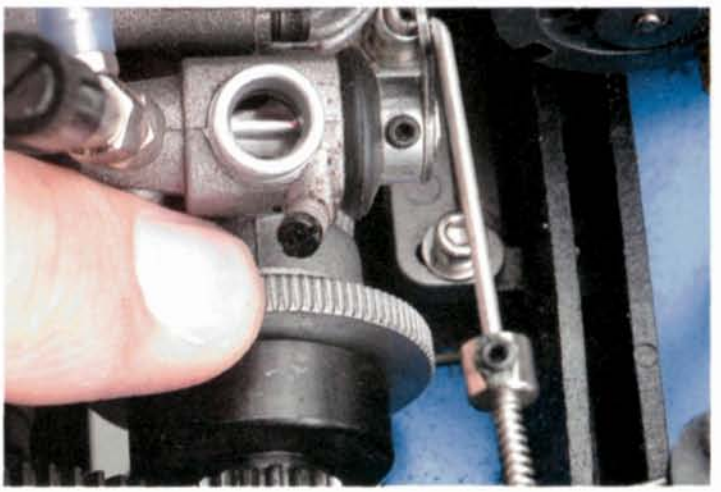
Until a bolt-on "gallon-o-meter" is invented, there's no way to know how many gallons of fuel have passed through any engine, and can you trust the seller's claims? An engine advertised as "Hardly used; less than 2 gallons," will, however, show less wear than an engine that has drunk 8 gallons. A new or fairly new engine's piston/sleeve fit (this determines compression) is tight, and it loosens with use.

To check an engine's piston/sleeve fit, simply turn the crankshaft or flywheel at least one full revolution and check its resistance. As the crankshaft of a "new" or "hardly used" engine is turned past the top of its stroke, it should present plenty of resistance. A distinct "thump" should be noticeable when a glow plug is installed in the cooling head; if there's little resistance, the engine needs a new piston and sleeve.

Left top: if the piston can reach the top of the sleeve without much resistance, it's time for a piston and sleeve replacement.



Left bottom: this piston shows signs that the previous owner removed the sleeve with a screwdriver or another metal instrument that damaged the edge of the port; over time, this led to this type of piston damage. At the very least, this engine requires a new piston and sleeve.



Right: to quickly check a nitro engine's piston and sleeve, rotate the flywheel with one finger. If it completes a full revolution without considerable resistance, it's well worn (of course, you need to have a glow plug in place to do this test).

CHECK THE PISTON HEAD AND HEAD BUTTON

To do this, you'll have to remove the cylinder head. Check the piston head and head button (the area into which the glow plug is threaded). The head and head button on an engine that has always been properly tuned will be perfectly smooth. If you see pits or missing metal on either, you'll know that the engine has been run overly lean, has blown plugs, and/or has detonated and been generally mistreated.

Piston/sleeve sets cost between $100 and $200 plus (for certain competition engines), so think twice before you buy a used engine with pitting and/or poor compression.

CHECK THE FRONT AND REAR BEARINGS

Engine bearings develop play as they wear, and this can cause the crankshaft to wobble, and at high rpm it can snap; it can also cause clutch-bearing problems. An engine that's run without an air filter can suck in dirt that will contaminate the ball bearings, and this also causes excess play. As the balls inside the bearings wear against their races (the cages that hold them), the inner race begins to wobble and feel gritty when it's spun. New bearings spin smoothly.

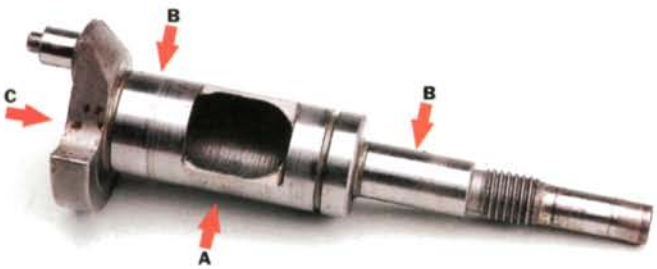
The condition of the crankshaft bearings has a noticeable impact on an engine's performance, but we often overlook them when we check and maintain our engines. Fortunately, we have tools such as this one from OFNA to extract and replace the crank bearings when we need to.

To check the bearings, completely remove the piston/sleeve assembly and the crankshaft. To check the front and rear bearings, insert your little finger into the bearing race and spin the bearing. If it feels gritty, or if the inner race wobbles as you apply force with your finger, your bearing is probably toast and should be replaced. A good bearing feels smooth and tight when you spin it.

CRANKSHAFT

The crankshaft's surface is an excellent gauge of how much an engine has been used and how well it has been maintained and protected from contaminants. Remove the crankshaft from the engine, and inspect its surface for scratches, discoloration and rust. Pay special attention to the area underneath the induction port; if the area around the crank's circumference is scratched, the engine has ingested dirt because it has been run with a poor air filter or even without a filter. Rust on the crankshaft shows that the engine has been stored with fuel inside its case or that it has been improperly stored during the winter.

Next, inspect the crankshaft for discoloration and deep grooves where the bearings would usually be seated when the shaft is installed in the engine. The shaft's bearing areas should be clean, and its surface should appear consistent with the rest of the crank. Any bluish-purple shaft discoloration or polishing in the areas where the bearings seat indicate that one or both of the bearings should be replaced. Significant polishing or discoloration shows that the bearing is seizing and not spinning with the shaft. A slight polishing might be acceptable in sport engines, which are assembled with looser tolerances, but not in high-performance engines.



The crankshaft's condition is a good indication of how well an engine has been maintained. Radial scratches around the induction port (A) show that an engine was run without an air filter or with a very poor one. Severe polishing or a blue discoloration on the crankshaft where the bearings seat (B) indicates bearing slippage that can be mild or severe; it also shows that the bearings might have locked up. Minor surface rust (C) is not an issue, but anything worse shows that an engine has been poorly maintained.

CHECK THE CONNECTING ROD AND WRISTPIN

When they replace a piston and sleeve, most racers don't think about also installing a new connecting rod (conrod) or a new wristpin (this attaches the conrod to the piston). Most assume that these components must be good if they aren't broken. But a used engine that seems to be "like new" because, among other things, it has a new piston and sleeve, may still require work and expense to bring it up to spec.

Conrods take a lot of punishment, and over time, they can stretch or even break (if they're very worn or have been abused). How can you tell if the conrod is so worn that it should be replaced when the engine has good compression? You have to remove the backplate and check it.

Conrods that are in good shape fit the crankshaft journal snugly and show very little play—no visible gap between the conrod's brass bushing inside and the journal. Friction slowly wears away the bushing inside the conrod. To test their fit, put a drop of after-run oil on the rod bushing and slowly rotate the crankshaft by hand. Does oil bubble out between the rod bushing and the crank journal? Even a new engine will have a few thousandths-inch clearance to allow the lower rod end to slip over the journal at a slight angle when it's installed, so

This engine's piston and cylinder head at first seem to be in good shape, but the surface of the head and the top of the combustion chamber are pitted. This reveals that the engine has been run lean enough to damage the glow plug, or that certain running conditions caused it to detonate. Both circumstances cause surface pitting.

don't expect a tight fit here. Excessive crankpin play in the conrod bushing is easy to see. It can cause the journal to jump inside the bushing as the crankshaft spins during combustion. This shows that the engine has been well used and needs a rebuild or, at least, a new conrod, which can cost $50 or more.

If you decide to replace the conrod, replace the wristpin as well, as wristpins are cheap and easy to replace.

DOES THE ENGINE PASS INSPECTION?

Buying a used engine is risky unless you know the seller well—his tuning abilities and honesty—or you can inspect the engine thoroughly before you buy it. If you can, disassemble and inspect an engine before you buy it, or, if you buy online, ask for detailed photos of all the disassembled engine's components so that you'll be able to decide whether the cost of replacement parts outweighs the cost of a new engine. Depending on its price, a used engine can be the deal of a lifetime or a costly nightmare. If you follow my advice, the choice whether to buy or pass will be obvious! ■

TECH Q&A

Q Why did my engine self-destruct last weekend? I bought it used and was told it had less than 2 gallons run through it. I ran it for several tanks, and then it stopped suddenly on the straightaway—completely seized. I disassembled it and was disappointed to see that the piston had shattered near the exhaust port. I hadn't run it too hot, and the glow-plug element is still shiny. An experienced RC guy told me that the conrod bushing had lots of play on the crankshaft pin, and he pointed out that we could see oil being squished out of the rod bushing when we rotated the flywheel. Is this why my engine broke? Is this normal after 2 gallons of fuel? What now? [email]

A This month's column would have helped you to avoid this. It sounds as if your engine had been run for far more than 2 gallons. Excess play between the conrod and crank journal and a loose fit between the piston and sleeve can cause the piston to shift, catch on a port and damage your engine.

What now? Completely disassemble the engine and clean its components; check for gritty bearings. If the bearings are smooth and not damaged, replace the piston and sleeve, the conrod and the wristpin. Your engine will then be as good as new. But perhaps a new engine would cost less than your repairs. If the bearings have been damaged by piston debris, this will probably be the case. In the future, to avoid having to do expensive rebuilds, inspect your engines' components for excess play, and replace worn parts before they give out.

CONTACT THE **PISTON POWER SOURCE**

Send your Piston Power questions and comments to Steve Pond
stevep@airage.com

BY JOSH THIEL

Let it shine

With the introduction of Alclad's Chrome paint for Lexan, the quest for the holy grail of RC paint has been realized. You've probably seen chrome paint on your favorite full-scale car or motorcycle racer, but the true automotive versions of this paint are very expensive and don't adhere well to Lexan. That's all changed now; Alclad's Chrome has opened up new territory for trick RC paint jobs. Here's how to make it work for you!

How chrome paint works

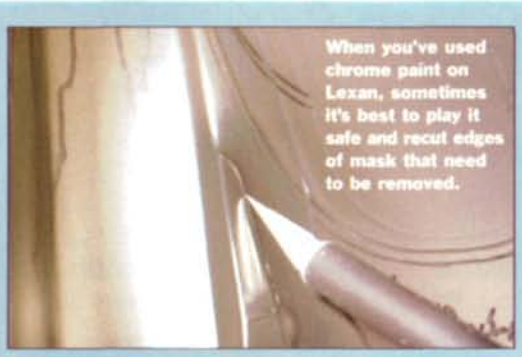
Most of today's modern, water-based Lexan paints are very simple and straightforward to use; however, it can be a challenge to apply and achieve a perfect finish with chrome paint. It's important to understand how this chrome gets its shine because most of the problems you'll come across are related to this. Alclad achieves a chrome-like finish by using ultra-fine reflective particles that mirror light back through a transparent layer, i.e., something shiny and clear such as Lexan. This can be problematic because any imperfections in the Lexan (cut marks, mold errors) will become very obvious when using chrome. Also, applying "fades" with other, non-transparent paints interferes with the chrome paint's reflective interface and causes "dulling."

By using the tips and techniques detailed here, you can avoid problems in laying down chrome paint, and you'll learn a couple cool effects as well. When painting this month's body, I'll employ and illustrate several variations using chrome paint.

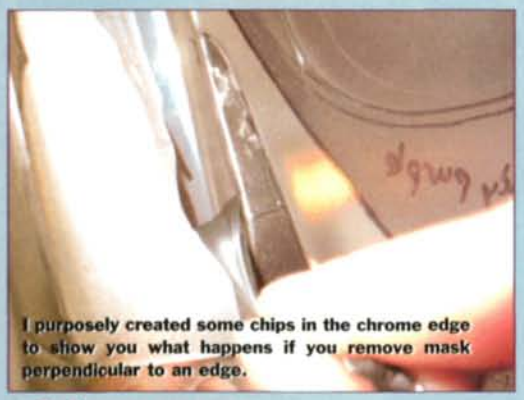
Prep

Today's victim is Pro-Line's excellent mold of Ferrari's latest super car—the Enzo FX. As usual, I prepped the body for paint by washing it and then spraying on three solid coats of liquid mask. When you plan to use Alclad Chrome, don't use cleaning or scrubbing pads that are even slightly abrasive because even fine scratches will show through on the final chrome finish. In addition to its chrome paint, I will use Alclad transparent paint, Parma Faskolor and Pactra candy colors. Don't worry about mixing paint systems; they are compatible. I'll use an airbrush to apply the liquid mask and paint.

PHOTOS BY JOSH THIEL & DERON NEBLETT



When you've used chrome paint on Lexan, sometimes it's best to play it safe and recut edges of mask that need to be removed.



I purposely created some chips in the chrome edge to show you what happens if you remove mask perpendicular to an edge.

Fixing errors

I frequently use chrome as a trim highlight. Ordinarily, these small segments are painted first, however, many times this causes trouble. Although it adheres to Lexan much better than automotive chrome paint does, Alclad Chrome has a lower adhesion than other RC-compatible paints, so it can be pulled off when you remove sections of mask. Don't be afraid to recut an edge if you think the chrome might peel off (I know this sounds painful, but perfection isn't always easy). Luckily, when you recut an edge, only very light pressure is needed and you don't have to be very exact because you just want to break a super thin layer of paint.

Unfortunately, chips can still be lifted off an edge no matter how careful you are; if that happens, its time for damage control. To simulate an error, I purposely pulled a masked section perpendicular to and directly into the side of a chrome edge. Sure enough, chips of chrome were lifted off, but the paint job wasn't ruined. If very large chunks are pulled away, it is best to carefully re-mask and re-paint a section, but if the chips are small, you can dab on chrome paint to fill them in; carefully placed drops solve that problem.

Chips are easily fixed with dabs of chrome paint.

Chrome paint application tips

HERE ARE A FEW GOOD RULES TO FOLLOW WHEN APPLYING CHROME PAINT.

- Initially, spray a very light coat of chrome at around 12psi to promote adhesion—a "sticking" layer—and follow it with a fairly heavy second coat.
- Make sure that each coat is thoroughly dry before you apply the next.
- Two coats should give you an excellent-looking chrome finish, but if you plan to follow it with other colors, it's best to add a third coat to make the surface chrome opaque. Other coats can then be oversprayed without worry.
- Be aware that any unnecessary cut marks you make when you trim the mask will stick out like a sore thumb. Normal paint fills in scratches and lessens their appearance, however, because chrome reflects most light, cuts will cause large, visible refractions.
- Chrome can also be "faded" with non-transparent colors. How well you fade the paint will directly affect the look of the chrome. If you use chrome as the background color for a fade, be sure to minimize the level of overspray from the first colors. Even the smallest amount of paint will dull the chrome into flat silver.
- If chrome is applied first as a highlighting fade, you don't need to worry about the dulling of transition zones. On the rear of the Enzo, I sprayed in some ghost streaks. Although the chrome was sprayed on very lightly, it still created a reflective highlight. The sprayed-on chrome was barely visible before I back-coated it with black.

Scratches like this little skull and crossbones would typically be hidden by normal paint, but not with chrome.

chrome and candy colors

One of the better uses for chrome is to make super-rich and reflective candy colors. By applying a layer of transparent tinting paint, also known as candy color, you can achieve a deep, almost anodized-looking finish. Alclad markets several transparent colors just for this purpose. The following tips should yield wild results.

Chrome doesn't have to be used by itself. You can achieve trick results if you use it with other paints.

- As with the chrome, an initial thin, "sticking" layer should be sprayed on first.
- This is followed by a heavier second coat that should be thick enough to "gloss out" and form a transparent layer of color.
- If you want to get *really* wild, sprinkle silver glitter (see last month's "Body Shop" article "Painting with glitter") on a coat of transparent color that is still drying; that way, you won't need Parma's Faskoat to make the glitter stick. When the candy layer has dried completely (at least 15 minutes), back it up with chrome.
- Candy colors can also be faded with a chrome background. The lighter you spray an application, the lighter the tone. After you've sprayed on the fade layer, make sure that the paint is dry before you lay down the chrome backing. Apply only thin coats of chrome paint, and be sure that each coat dries completely before you add the next. If you don't let the paint dry, the chrome will "eat" (dissolve) the first faded transparent layer, and that causes fogging and color loss.

Alclad's transparent colors aren't the only ones available. On the trunk lid of the Enzo, I used Pactra's Candy Purple to create the anodized look. In this same shot, you can also see the chrome trim area that I repaired earlier and a little of the glittered engine hatch.

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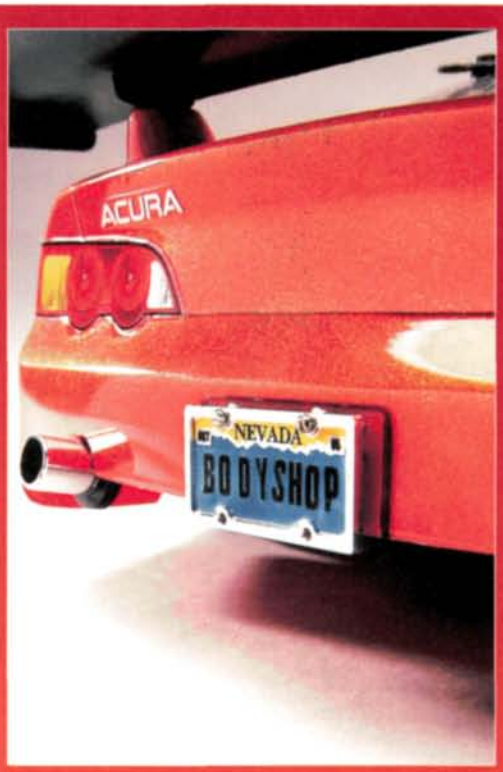
NEW IN THE SHOP

ROGUE ELEMENT CUSTOM LICENSE-PLATE KIT

You see vanity plates on full-size cars, so why not on RC rigs? Rogue Element now offers a very complete, scale license-plate kit that includes an aluminum license-plate frame, mounting hardware, two plate stickers, an appropriately colored letter sheet and two sets of tiny and totally cool expiration-tag stickers. The tiny, stainless-steel screws are very scale looking, and the little expiration tags really create a realistic final product. The die-cut stickers are waterproof. Six plates are presently available with all 50 states (and then some) slated to be on hobby shop shelves soon.

Colorado (white)—item no. LPK-COW/Colorado (green)—LPK-COG, California—LPK-CA, Nevada—LPK-NV, Florida—LPK-FL, Arizona—LPK-AZ; $9.99 each.

Rogue Element Components (719) 821-1526; rogueelementcomponents.com.



Although applying chrome paint can be tricky, the effects it can add are just so cool that it's worth the extra time and care it takes to use it. Another point to remember (as the editors of RC Car Action like to remind me): don't paint your wing endplates chrome because double-sided tape just falls right off the stuff. The paint also isn't very wear resistant, so if you use chrome paint on an area that you grab a lot (or that rubs on a chassis part), protect the finish with Shoe-Goo or a piece of tape. ■

SOURCE GUIDE

ALCLAD II distributed by Schumacher USA (813) 643-1232; alclad2.com; racing-cars.com.

PACTRA INC. distributed by Testor Corp. (815) 962-6654; testors.com.

PARMA/PSE (440) 237-8650; parmapse.com.

PRO-LINE (909) 849-9781; pro-lineracing.com.

K&N
High-performance air-filter kit for Traxxas T-Maxx 2.5

K&N'S NEW INTAKE KIT FOR THE T-MAXX 2.5 includes a durable chrome filter, a billet aluminum adapter, K&N filter oil and O-rings. The filter has a greater surface area than the stock setup, so it provides an increased filtration capacity with less air restriction. The filter is also washable, so you can easily restore its performance after a day in the dust. To make the installation easier, remove the carburetor from the engine. Two O-rings must be carefully "persuaded" into the area between the carburetor neck and adapter; lubing the O-rings will help. When in place, the adapter is very secure and well sealed on the carburetor. The filter neck's ribbed design is mated to the adapter to create a tight seal, and if you run either the 20-tooth or 18-tooth clutch bell, there's plenty of clearance between the spur gear and filter neck. The kit also leaves room around the carburetor for tuning and cleaning. A clearance issue arises only if you install a 16-tooth clutch bell, in which case the filter neck will contact the spur gear slightly. After installation, the system provided noticeable improvements to engine performance, with snappier acceleration and a few more rpm at top speed. Interestingly, the K&N-equipped engine favored a slightly richer setting to deliver maximum performance; that's good news for the piston and sleeve.

Air-filter kit—34095; $35.

K&N Engineering Inc. (800) 858-3333; knfilters.com.

Hobbico
MicroSizers digital lap counter

HOBBICO HAS DEVELOPED A DIGITAL LAP COUNTER for micro and mini RC vehicles that has 1/100-second accuracy and selectable "time" or "lap" functions. The lap-counter display has 2 LEDs that light up to signal the beginning and end of a race and a digital LCD that tracks the race statistics and reveals final lap and time information. An audible alert indicates when a "best lap" is achieved and when the race is almost over.

For convenience, a detachable start button is tethered by a 12-inch wire. The button can also be used to see how long you have been racing: just hold it down to display the timer. An infrared optical sensor in the rear of the lap counter has a reliable range of 8 inches when the included sensor reflector is used. Two AAA batteries power the unit, and an "auto-off" feature extends battery life by switching off the timer after 5 minutes of inactivity.

In testing, the lap counter was easy to use and reliably counted laps for the MicroSizers and Kyosho Mini-Zs for as long as we could squirt the cars between the lap counter and the reflector. The buttons are well labeled and allow you to quickly navigate through the menu to select your race parameters. The lap counter can be set for 1 to 10 minutes and for 1 to 500 laps. It only allows one car to race at a time, so grab a pencil and paper to jot down your best times for bragging rights.

Digital lap counter—HCAP0002; $25.

Great Planes Models Distributors (217) 398-6300; (800) 682-8948; hobbico.com.

RC Trix
Components for Team Losi Triple-XNT

TEAM LOSI'S TRIPLE-XNT IS MADE FOR RACING, and that makes it an extremely tough machine, but that doesn't mean it's designed *purely* for strength. Race machines are built as strong as they need to be, not as strong as they can be, so a little extra beef is always welcome for hardcore thrashers. A little style doesn't hurt either, and a blend of strength and style is exactly what the gang at RC Trix hopes to give your Triple-XNT with these aluminum suspension arms, battery box, pivot blocks and shock towers. All of the parts are machined of 6061 billet and are available anodized in vivid blue or treated to a chrome-like "Brite Dip." You can buy the parts individually, or you can order the complete set with one item number (the info is at the end of the article). Here's how the parts stack up.

■ SUSPENSION ARMS

The RC Trix arms were installed as easily as the stock parts, and fresh hinge pins are included. Use a little thread-lock on the shock screws since they aren't self-tapping into plastic anymore. The rear arms' shock-mounting holes duplicate the stock arms' top three holes, but the RC Trix arms omit the two lower holes. In the front arms, you'll notice a pair of extra holes; these are for RC Trix's soon-to-be-released Aftershock system.

■ SHOCK TOWERS

These direct bolt-ons were installed without difficulty (but again, thread-lock is recommended). The body posts are separate threaded parts, and the body-clip holes lined up perfectly when the posts were tightened—those threads are cut carefully! As with the arms, the shock-mounting holes are identical to those on the stock parts, so your setup won't be changed when you install the RC Trix parts.

■ PIVOT BLOCKS

The pivot blocks were installed in conjunction with the arms. Since the aluminum arms have virtually zero give, they're likely to overstress the stock plastic pivots. Adding the RC Trix aluminum versions makes the XNT just about crash-proof. There weren't any fit issues when everything was assembled, but one of the hinge pins was a bit tight in the rear arms. It rotated freely in the pivot block, though, so there wasn't any binding in the system. Suspension geometry was unchanged by the RC Trix parts.

■ BATTERY BOX

Ah, the finishing touch. Regardless of brand, any battery box hung off the rear of a chassis is almost certain to break during a hard rear-end-first landing. Upgrading to an aluminum job like the RC Trix box is the bulletproof option. The box clamps a "3x2" receiver pack tightly, and it won't part from the chassis no matter how hard you biff. Installation was easy, but we did have to add spacer washers as RC Trix suggests; they're included with the box.

RC Trix on the track

After installing all the RC Trix gear on a Triple-XNT, we gave it a good backyard-bash-style thrashing to see how the gear would hold up. A busted-off battery box is the most common day-ender for us, so we intentionally let the XNT make some hard, butt-first landings. The box's square edges tore divots out of the ground, but with the exception of scraped anodizing, no damage was done and the receiver box stayed put.

Likewise, cartwheeling wrecks left the truck unscathed. It is conceivable that an impact could be severe enough to make the arms bend and stay bent—they are metal, after all—but we couldn't hit them hard enough to make that happen. Sure, we could have driven the truck into a light pole at full throttle, but we didn't see the point. Even if the RC Trix parts could take it, the rest of the truck would be toast!

Since the RC Trix parts don't alter the suspension geometry, we figured our "alumified" XNT would handle like the stock truck, but it didn't. The difference was subtle, but the truck had a little more rear traction (which makes sense, since the aluminum rear arms and battery box put more weight on the rear tires). The extra weight didn't seem to impact acceleration and top speed in any noticeable way, though; if anything, the truck felt faster because it was more planted.

RC Trix blue aluminum parts kit for Team Losi Triple-XNT—RCT 3600NTBL; $200.

RC Trix (866) 472-8749; rctricks.com.

Tale of the scale: stock vs. RC Trix

"But aluminum is heavy!" Not as heavy as you might think. We weighed the stock plastic pieces and their RC Trix counterparts to see how many grams are really at stake.

	Stock	RC Trix
Front arms (pair)	28g	36g
Rear arms (pair)	47g	64g
Front pivot block	3g	12g
Rear pivot block	4g	17g
Front shock tower	12g	21g
Rear shock tower	30g	51g
Battery box	27g	48g
Total	151g (5.3 oz.)	249g (8.8 oz.)

The difference in the total weight of the plastic pieces versus the aluminum parts is 98 grams (3.5 ounces). For comparison's sake, an 1100mAh receiver pack weighs about 105g. A complete Triple-XNT weighs 1,890g, so you're looking at a 5.5 percent weight increase—give or take.

Trinity
Aluminum parts for Associated RC10 B4

NOW THAT EVERYONE AND HIS BROTHER HAS A B4, it's time to dress up yours so you can have something a little different, and maybe help it move a little faster, too. Trinity has a bunch of blue stuff to separate your B4 from the pack; we bolted on the goodies to see what they could do for Associated's best buggy.

■ SHOCK BUSHINGS

These are pretty clever. Each aluminum mount uses a sleeve bushing to hold the shock, and the bushing extends past the aluminum mount by about a millimeter. The bushing's diameter increases when the shock-mounting nut is tightened against it. This makes it easy to dial out suspension play.

■ HINGE-PIN BRACE

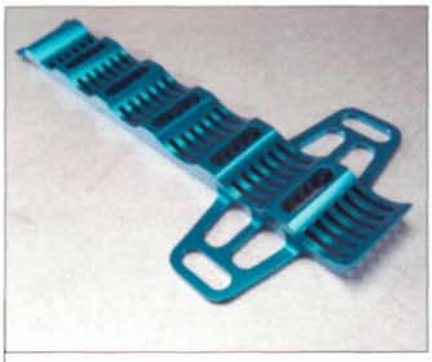
If you have Trinity's bulkhead on your car, this piece is pure overkill (but it looks cool). Used with the stock bulkhead, the aluminum brace can help transfer single-arm impact loads to both hinge pins more efficiently than the stock plastic part, but this is still mostly a dress-up part.

■ SERVO MOUNTS

The stock plastic servo mounts can't possibly flex much, but stiffer is always better. And if you frequently swap your servos from vehicle to vehicle, the aluminum parts will keep their threads much longer than the stock plastic nubs.

■ MOTOR PLATE

Cooler is faster, so Trinity's plate wears an ample supply of cooling fins to help your motor shed heat. It replaces the stock plate perfectly.

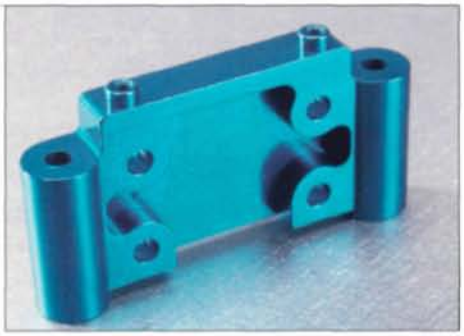


■ BATTERY BRACE

Trinity is looking ahead; this brace has elongated holes for the mounting posts, so it will fit the T4 when it arrives. The brace is scalloped to hold the cells tightly, and its deep-cooling fins will help keep your packs chilly. And the style points? Through the roof.

■ FRONT BULKHEAD

We bolted in Trinity's part just as easily as we'd install the factory part. The bulkhead includes setscrews to pinch the hinge pins in place, but they're difficult to access after installation. No matter; the hinge pins are captured and don't need E-clips or setscrews. The original plastic bulkhead is tough, but Trinity's aluminum part can only be stronger.



Will Trinity's parts help you go faster? Probably not in any measurable way, but they will help you tune the car a little better (since the shock mounts reduce suspension play), hang a little tougher (the front bulkhead is bombproof) and run a little cooler (thanks to the finned battery brace and motor plate). All are well made and perfectly finished, and the prices aren't bad either. Good stuff. ■

Trinity Products Inc. (732) 635-1600; teamtrinity.com.

Hinge-pin brace—TRI33000; $9.
Motor plate—TRI33006; $26.
Battery brace—TRI33005; $26.
Shock bushings—TRI33007; $6.
Servo mounts—TRI33009; $20.
Front bulkhead—TRI33001; $20.

ADVERTISER INDEX

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Bruckner Hobbies **225**
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Carlsen USA RC **257**
CEN/Genka Trading Corp. **132, 133**
Chin Ngai Hobby & Co. **233**
Competition Electronics **189**
Dayberry RC Distributors Inc. **207**
Deans **243**
DuraTrax **87, 149, 163, 171, 187**
Dynamite **20, 21, 141, 143**
eHobbies **210**
Epic Motorsports **3, C4**
ERI Associates **263**
First Hobby **217**
Fox Mfg. **263**
Futaba **123, 205**
General Silicones Group Inc. **43**
Global Hobby Distributors **68, 69, 124, 125, 161, 231**
GM Racing; distributed by Horizon Hobby Inc. **173**
Golden Horizons Racing **192**
Gorilla Maxx RC Parts **263**
GS Racing; distributed by Horizon Hobby Inc. **48, 49**
Hacker Brushless USA **105**
Hardcore Racing Components **92, 93**
Hitec RCD Inc. **45**
Hobby People **200, 201, 202, 203**
Horizon Hobby Inc. **193**
HPI Racing **74, 75, 126, 127**
Hudy Special Products **214, 215**
HyperHobbies Inc. **259**
Imex Model Co. **115**
Impact Performance Products **254**
Integy/Matrix Technology **181**
JR Racing **227**
Kimbrough Products **256**
Kyosho **36, 37, 183, 229**
Magma Intl. **259**
Megatech **90, 91**
MIP **209**
Model Rectifier Corp. (MRC) **16, 99**
Mugen USA **106, 107**
Nitrohouse.com **248, 249**
New Era Models **222**
Novak Electronics Inc. **25**
Nova RC Products **256**
OFNA Racing **58, 59, 60, 61, 63, 65, 66, 67, 89, 165, 167, 191, 199, 223**
OmniModels **204**
O.S. Engines **221**
Painting and Detailing RC Bodies **255**
Parma/PSE **241**
Peak Performance **32**
Powerline Racing Products Inc. **218**
Power Station **263**
Pro-Line USA **6, 7, 8, 9, 154, 266, C3**
PSP Mfg. **254, 256**
Qaxu Technologies **182**
Quantum Models **247**
Radio Control Specialties **207**
RAm (Radio Controlled Models Inc.) **263**
RC Car Action **211**
R/C Car Kings **258**
RC Explosion **232**
RCHub.com **257**
Radio Control Monster Trucks **224**
R/C MTRA **254**
RC Nitro **206**
Ultimate Nitro Engine Guide for Radio Control Vehicles **251**
RC Screwz **250**
RC Solutions **147**
rcstore.com **260, 261**
RC Trix **234**
RC Universe **188**
RCX: Get Started In RC **235**
RCX 2004 **195**
Robinson Racing Products **70, 71, 72, 73**
Serpent Inc. USA **162**
Sheldon's Hobbies **244, 245**
Sidewinder Fuels **144**
Sims Advertising **134**
Stormer Hobbies **236, 237, 238, 239**
SVM Racing **166**
T.A. Emerald Industries **250**
Tamiya America Inc. **14, 15, 46, 47, 262**
Team Associated **12, 13, 22, 23, 34, 54, 55, 56, 57, 116, 117, 208**
Team Losi **76, 77, 135, 213**
Team Orion Inc. **29, 33, 35, 152**
Tier 1 Motorsports **164**
Tower Hobbies **174, 175, 176, 177, 178, 179, 180, 216**
Traxxas Corp. **19, 30, 31, 50, 51**
Trinity Products Inc. **C2, 4, 5, 10, 11, 26, 27, 28, 38, 40, 41, 155**
Varad Corp. **219**
Venom Racing **186, 207**
XXX-Main Racing Inc. **190**
Yokomo USA Inc. **53**

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backlot

RANDOM RADIO CONTROL RAMBLINGS

BY PETER VIEIRA

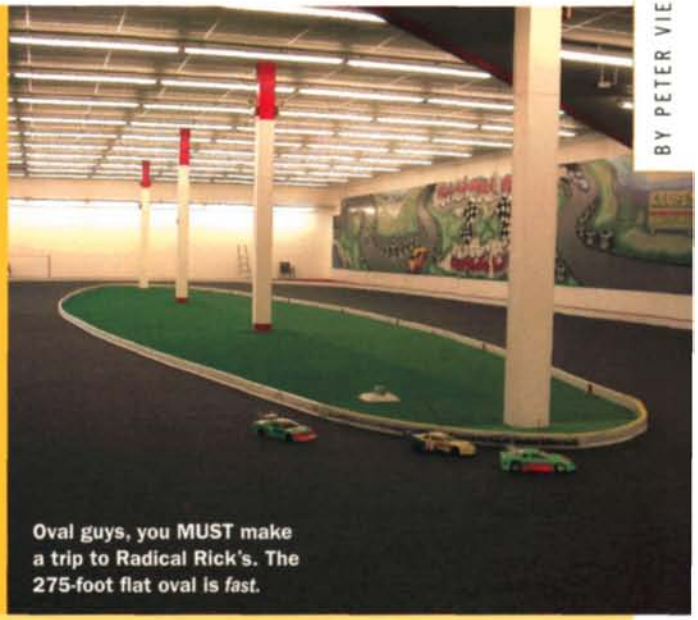
THIS ONE'S FOR THE KIDS

The Youth League racers run on an on-road course laid out with Road Rails on new Ozite.

Naturally, there's a complete hobby shop for all your cash-blowing needs. There's also an arcade and a pizza parlor!

While testing the Tamiya Evo III Surikarn Limited at Radical Rick's Race City in Swansea, MA, I picked up a flyer for Rad Rick's Youth Racing League. It's a pretty cool concept: the League racers are organized by age (7-10 and 11 and up), and they run touring cars in a 14-week point series that leads to a championship finale. The first race is devoted to racer orientation, and it covers car maintenance, transponder procedure and basic driving. To keep things fair, the racers must run stock sedans, and the cars are tech'd to make certain none have an unfair advantage. In addition to organized racing against kids their own age and skill level, the Youth League racers get fed! Each racer gets a jumbo slice of pizza (trust me, it's a big slice) and a soda. How cool is that?

If you can't get there in person, visit Rick on the Web at radicalricks.com.



Oval guys, you MUST make a trip to Radical Rick's. The 275-foot flat oval is *fast*.

For doing his part to get new racers into RC and for keeping them there with fair, friendly competition, "Radical" Rick Martin gets the Backlot Official Cool RC Guy seal of approval. Would you like to nominate someone for official Cool RC Guy status? Email us at backlot@airage.com!

WHAT'S YOUR EXCUSE?

So there I was, having a great qualifier, when suddenly I felt something bug-like land on my neck. I did a headshake and made some hard shrugs, but the critter wouldn't budge. So I decided that I would use the straight-away to take my hand off the wheel, dispatch whatever insect was getting ready to make a meal out of me, and then get my fingers back on the radio in time to make the turn. Well, the straight was shorter than I thought, and as I crashed over the berm the "something was biting me" bad-driving excuse was born.

What's your favorite excuse for blowing it? Anything is better than, "It turns out I can't drive." Email your favorite excuses to backlot@airage.com. If we print yours, you'll win something.

DIRT DUAL

Does anyone mind if I plug the latest issue of *RC Nitro*? Good. Make sure you check it out; there's a killer "RC vs. MX" article in there with Kevin Hetmanski and his Kyosho Inferno MP-7.5 taking on a Suzuki RM125. Don't miss it! And if there's an unusual "RC versus ..." matchup you'd like to see, let us know at backlot@airage.com!